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The Church of Worstead.

THE lordship of Worstead formed part of the gift of Canute to the Abbey of St. Bennet of Hulme. In the days of the Confessor it was a place of some importance, and possessed two churches. The manor continued in the hands of the great Benedictine Abbey after the Conquest; but the principal church of St. Mary, together with the second church of St. Andrew, which was treated as a chapel of the former, was appropriated early in the thirteenth century to the cathedral priory of Norwich. The church or chapel of St. Andrew stood to the north-east of the great church. In 1291 the appropriated rectory was returned as of the annual value of 16*l.* 13*s.* 4*d.*, whilst the vicarage was only worth 5*l.* per annum.

Worstead has now for many years been but a village, chiefly of a single street; but it was for a long period far more populous, and was at one time the chief local centre of the woollen manufactories of East Anglia. It is one of the very few places in England that has given its own name to the material there produced; a name that seems never likely to die out in connexion with textile fabrics, and is to-day used by thousands of persons who never even heard of this somewhat remote Norfolk village, whose past glories are now centred in its church.

Blomefield, the great Norfolk authority, was of opinion that some Dutch weavers, driven out of their country by an inundation in the reign of Henry I., settled at Worsted, and thus early introduced the web of stuff weaving into that place, from whence in due course it made its way to Norwich. It seems doubtful whether Blomefield does not assign too early a date for this introduction, but there is no manner of doubt that the produce of this town became well known in the thirteenth century. Among the accounts of the City Chamberlain of Norwich from 1293 to 1305, there is an annual entry of presents made to the King's Judges when on circuit. Among these presents occur *panni de Worthstede*. The cloths woven at Worstead, as well as those of Aylsham, were thought worthy of being offered to the King's justices at a time when nothing is entered about Norwich fabrics. The supremacy of Worstead cloth is further shown by the fact that in the reign of Edward II. one of the Norwich market rows was called "The Worthstede Rowe." Worstead cloths were also expressly mentioned in legislation of 1329, and the trade of the place was doubtless for a time furthered by the stringent legislation of 1337, as nearly all export of English wool and all import of foreign cloths were forbidden, whilst every man, woman, and child in England, save royalty, were compelled to wear nothing but clothes of home manufacture.

From another source something tangible can be gleaned of the comparative wealth and position of the town of Worstead in the fourteenth and fifteenth centuries. Among the many valuable monuments of the City of Norwich is a volume that gives the assessments of all the townships of Norfolk for the King's tenths and fifteenths as settled in 1334, and also as they stood in 1449. In 1334 Worstead was assessed at the then considerable sum of 14*l.* 10*s.* 1¾*d.*, which was far in excess of all other townships in the hundred of Tunstead, save that of North Walsham, which stood at 15*l.* At that date Worstead was nineteenth on the list of the most wealthy towns of Norfolk, such towns as Aylsham and Wymondham being a long way below it. The upheaval of the awful Black Death of 1349 gave the county a shock from which she never quite recovered; but Worstead regained her prosperity quicker than some of her neighbours, and in the next century out-distanced several. In 1449 Worstead's reduced assessment was 12*l.* 10*s.* 2¼*d.*, whilst North Walsham had dropped to 11*l.* There were at that time only fourteen townships in the county at a higher assessment.

About the close of the reign of Edward III., when the architecture that had characterised that period was dying out, the well-to-do merchants and weavers of Worstead bethought them that their church was not worthy of the prosperity of the town. A great scheme of rebuilding, or rather of the gradual erection of a new church, was devised. The work began with the chancel in 1379, when John de Kynneburle was vicar. The prior of Norwich granted thirteen oaks out of Plumstead Wood, and also timber out of St. Leonard's Wood for the roof and woodwork, and the expenses in money amounted to 24*l.* 4*s.* 4*d.*

The church of St. Mary, when completed, was one of the finest in the county, and now consists of chancel with north vestry and north and south chapels, clear-storied nave with north and south aisles, south porch, and western tower. A clean sweep was made of all older work. The only remnant of anything earlier than the reign of Richard II. is the broken bowl of a former octagon font, which now lies at the west end of the north aisle, and which was rescued in recent years from under a pump in the village. The rebuilding of so great a church would certainly be undertaken in stages, for there were no school-rooms or temporary structures for worship during the restoration in Mediæval days. It seems likely that the work, which began with the chancel, finished with the western bay of the nave and noble west tower about 1400. There is more of true "Perpendicular" feeling in parts of the south porch and enriched north doorway than in any other part of the building (save the vestry and a little obviously late work); but another possible theory may be mentioned with regard to the tower, viz., that it was built out beyond the old church before the new building had reached the west of the nave. This, however, seems highly unlikely when the junctions of the tower with the body of the church are studied.

This church was not overlooked by the earlier writers on ecclesiastical architecture of last century. There is a good description of Worstead church, so far as the study of church architecture had then advanced, in Neale's and Le Keux's "Collegiate and Parochial Churches," published in 1823-4, with engravings of the tower and font, and some careful letterpress, chiefly descriptive of the remains of its

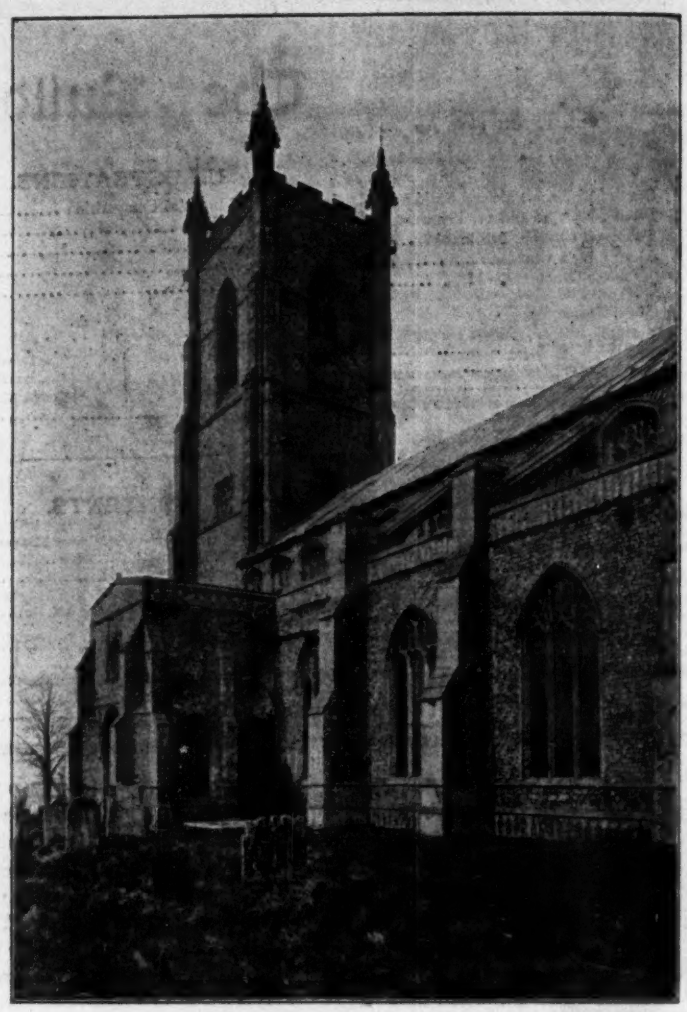
splendid fittings. The beautiful character of the work of the tower and the south porch is specially mentioned. It was only natural that Worstead should be included in the two score churches commemorated in Neale and Le Keux's two volumes, irrespective of its intrinsic worth; for J. P. Neale, the celebrated architectural draughtsman, born in 1780, was a native of Worstead, a fact which is omitted in the account of him in the "Dictionary of National Biography."

In Brandon's "Analysis of Gothic Architecture" (1847), Worstead Church is singled out for special and not infrequent mention. Attention is directed to the tower as "a peculiarly magnificent example," the panelled flint work and the sunk quatrefoils having a very good appearance; to the embattled label and rich carvings of the spandrels of the north door; to the single design shown in the combined effect of the west doorway and window above it; to the grandeur of outline of the tower buttresses; and to the enrichment of the font steps with quatrefoils. Brandon's "Parish Churches" (first issued in 1846) gives a ground plan, north-west and south-west views, and a view of the interior looking west. It is described, as "a spacious and magnificent church,' with a tower of "superior beauty."

The dimensions of the church are:—chancel, 39 ft. by 29 ft. 3 in., and nave, 89 ft. by 29 ft. The width of the north aisle is 11 ft. 11 in., and that of the south aisle 11 ft. 8 in.

The south porch, drawn carefully by Cotman in 1817, is a noble example of flint and stone work—flush-work is the usual and expressive local term—and is one of the finest porches in a county where so much skill and judgment were often displayed on the southern or chief entrance. It has a beautiful triple group of niches, with crocketed canopies over the entrance, having shields in quatrefoils (the foils alternating with points) below them. There are similar shields in the spandrels of the doorway. The buttresses are exceptionally bold and good, and the double line of base moulding remarkably effective; the lower of these stone and flint panellings is of a usual fifteenth century trefoil-headed character, but the upper one has a beautiful and unusual arrangement of trefoils placed diagonally. The latter ornament, taken apart from the rest, would certainly be styled Edward III. at latest. A handsomely-groined roof supports a parvise, or upper chamber, access to which is gained by a stairway from the church. The central boss of the groining represents the Holy Trinity, whilst the four subsidiary ones bear the symbols of the four Evangelists. The hollow mouldings of the entrance are ornamented with small alternate flowers and masks.

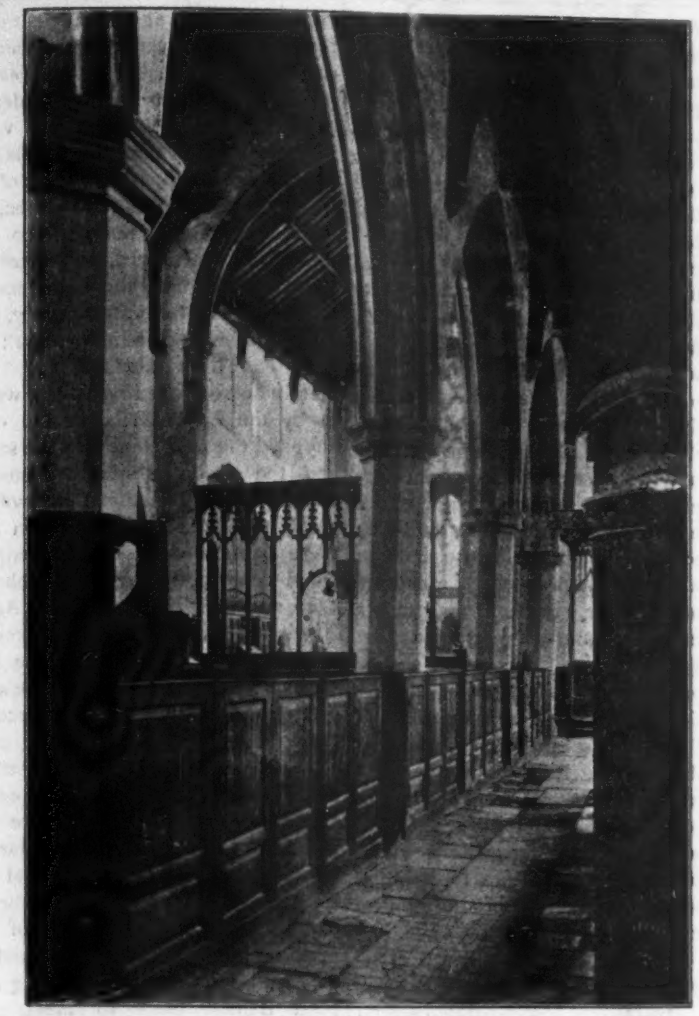
The remarkably rich character of the south porch should not be allowed to divert attention from the north doorway, of which Cotman made a drawing in 1817. It is of considerable beauty. The angular pinnacles, the enriched cornice, and the two shields in quatrefoils (with alternate points and foils) of the spandrels are all well designed, and, in the absence of a porch, produce a singularly good effect. A small round flower, a sort of reminiscence of the ball-flower of earlier architecture, is introduced into the cornice and dripstone of this entrance. It is found elsewhere in this church, more particularly round the bell-chamber windows of the tower. Taken by itself, this round flower seems to speak plainly of fairly early fourteenth-century work; but in this doorway it is found in combination with small upright panels that are certainly of the end of the fourteenth century, if not later.



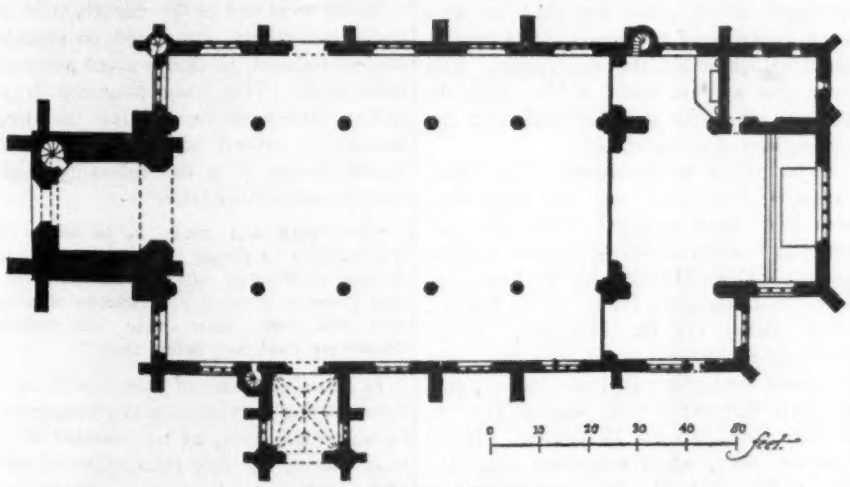
Worstead Church: Exterior.

The tower is one of best and most beautiful examples of flint and stone work of the opening of the fifteenth century to be found in the county. Its height is 109 ft.; at the base are panelled narrow trefoil headed arcades of but usual design, above them is a band of large quatrefoils filled up with dressed flints. The large square sound-holes of the second stage are filled with graceful tracery, the one on the west being particularly good. The large bell-chamber windows have delicately ornamented mouldings. Every detail of this tower is worth studying, particularly the bold graduated buttresses and the west doorway and window above. The four pinnacles that spring from the panelled battlements are the unfortunate feature of the tower as it now stands. They are somewhat top-heavy and singularly lacking in grace, resembling a partially unfurled umbrella. It is immediately obvious to the trained eye that such terminals could by no possibility have formed part of the original design of this tower. They only date from 1861, when they succeeded somewhat weather-worn predecessors of an ordinary crocketed character, as shown in the drawings of Brandon and others. But these, in their turn, were anything but old and out of harmony, though not nearly as much so as their successors. Neale's plate of 1823, and two drawings in the Dawson Turner collection, of 1817 and 1827 respectively, show low pyramidal plain pinnacles. Tower pinnacles from their unsheltered position naturally get more weatherworn and usually need more constant repair or renewal than any other part of a church. Consequently, it need not be supposed that the pinnacles of the early part of the nineteenth century were the original ones; nevertheless, it may confidently be assumed that their proportions were far nearer the original than either of the sets of their successors. The quatrefoil panelling of the base moulding of the tower is continued round the body of the church.

At least half a century after the general building of the church, an independent structural addition was made to the east end of the north chancel chapel, whereby the work on that side was brought up flush with the east wall of the chancel proper. This extension formed a two storied vestry; its construction was probably suggested by the requirement of a place for the safe bestowal of the costly church plate and vestments which had begun to accumulate, and for whose safe keeping the room over the porch was inadequate. This vestry is figured in a plate of the later editions of Parker's "Glossary," where the conjectural date of 1460 is assigned to it. It rather strikingly resembles the similarly situated vestry of North Mimms, Herts. There are double lights to the upper story, but the ground floor has only lancet slits, probably for the purpose of additional security. It seems likely that the chancel clearstory windows are of this date. A decidedly peculiar construction for a church of this size will be sure to be noticed by the observant as well as by architectural critics. The buttresses



Worstead Church: Interior.



Plan of Worstead Church.

of the two bays of the nave aisles nearest the east have been raised and strengthened, and from them proceed flying buttresses to support the nave clearstory. From their structure and lack of ornament (they certainly do not add to, but rather detract from, the beauty of the general design), it is obvious that these flying buttresses were added at a later date to resist the outward thrust of the nave roof, which has a span of 32 ft. 6 in. It is reasonable to suppose that this was done at the time of the vestry being added, when the presence of the workmen and certain general repairs brought some faulty construction to light.

The wide single hammer-beam roof of the nave has beautiful tracery work, chiefly combinations of quatrefoils, in the spandrels.

At the west end of the nave stands the font, which is one of remarkable grace, and of dignified surroundings; it is clearly coeval with the rebuilding of the church. In addition to the beautiful engraving of font and cover, given by Neale and Le Keux, the font is honoured with a whole plate in a paper on noteworthy English fonts contributed to the *Archæologia* in 1812, though no letterpress description is vouchsafed. Mr. Neale, curiously enough, describes it as "hexagonal," an obvious slip, contradicted by the plate, but which, having once been given currency, has been slavishly and absurdly copied by the whole tribe of guide-book makers ever since. Each of its eight sides is elaborately sculptured with beautiful tracery formed of various arrangements of quatrefoils. The bowl is supported by angels with outspread wings, and the base is divided into panels with cinquefoil heads and crocketed finials, almost exactly like the design of the openings of the rood-screen. The font is raised on three steps, the faces of the upper two of these risers are carved with quatrefoils flanked by upright trefoils and beaded panels. The topmost step of the three is cut out so as to take the form of a cross, whilst the two lower ones follow the octagon shape of the font. These steps, both in their enrichment and shape are strikingly like those supporting the font in the church of Walsingham. There is a lofty font cover of tabernacle work, which is now, however, but the skeleton of its original state when it was obviously much enriched; it has suffered a good deal since the time when it was drawn by Neale in the first quarter of the nineteenth century.

The rood-screen has been one of special importance and of singular beauty in colouring and painting. It is still of much interest, though, unhappily, tampered with several times during the last century, and its real date and history given a false rendering. Amongst Cotman's etchings of 1817 is a rough drawing of the upper part of "Worsted Screen." This forms one of the numerous series that was published in 1838, with letterpress by Rickman, who indulged in some sapient reflections as to its exact correspondence with the character of the church. Rickman had clearly never seen or noted the church, or he would not have fallen into this trap. Cotman, in the multitude of his Norfolk drawings, had evidently made a mistake in the lettering of this sketch, for it has not a shadow of resemblance to the Worstead screen. It is curious that this blunder has not, to our knowledge, been previously detected. There is, however, in the Dawson Turner collection (Brit. Mus. Add. MSS. 23,049) another drawing of this screen which is correct; in it appears the projecting canopy work which carried the rood-loft. This drawing is dated 1817, and is signed MAT. When perfect, this screen, with the panelling of the front of the rood-loft, with the rood itself towering above it, taken in conjunction with the subsidiary side screens of the aisles in the same line, must have presented one of the most magnificent arrays of carved and painted and gilded woodwork in all Norfolk; impressive when viewed as a whole, and bearing the closest inspection from the minuteness and delicacy of the treatment. All of the ten openings of the screen work, four on each side of the entrance and two over it, have cinquefoil heads with crocketed pinnacles running up into them. The tracery is by no means so elaborate as the far commoner Norfolk examples of screens of the end of the fifteenth century. But this is of better proportions, and when perfect must have been of more impressive design from its greater simplicity. It resembles somewhat in proportions, though not in details, the screens of the neighbouring churches of Swanton Abbot and Tunstead. Collings, in his "Gothic Ornaments" (1850) does well in mentioning Worstead screen first in the brief list of Norfolk screens named in the letterpress; but it has not generally received the attention that it merits, and this doubtless mainly on account of perhaps well-meant but most unhappy treatment. About the year 1823 certain money coming from what is known as the Wharton bequest for the repair of the church was used in removing the decaying canopy

work on the top of the screen, when some pains was taken to fit together a suitable but meagre cornice as a finish in its place. At the same time some of the colouring was slightly touched up and the whole carefully cleaned. In 1832-3, a series of beautiful and careful coloured and gilded drawings were made of all the screens in this church; they are now in the Dawson Turner collection, and are invaluable in the details they supply. It will be well to give an account of the screens from these drawings before further mischief was done to them; especially as to the best of our belief they have not hitherto been cited. With regard to the saints painted on the lower panels, there were sixteen on the rood-screen, and four each on the aisle-screens. Those on the rood-screen, beginning from the north side, were:—

1. Defaced. 2. Defaced. 3. A saint in profile without any emblems. 4. A young female saint, with book in right hand and basket in left; probably St. Dorothy. 5. St. Simon. 6. St. Jude. 7. The Man of Sorrows, Our Lord crowned with thorns, holding nails in right hand and book in left, and with spearhead piercing his breast. 8. An old man with hair to his shoulders, and white beard, crucified, being tied to the cross both by hands and feet, nude, save for loin-cloth and green mantle partly covering his shoulders (St. Nestor). 9. St. Andrew. 10. St. Peter. 11. St. James. 12. St. Thomas. 13. St. Bartholomew. 14. St. Philip. 15. The Saviour, left hand blessing, right holding *orbs mundi*. 16. St. John the Evangelist.

A band of inscription in small raised black-lettering on diagonal bands above the saints in the lower compartments ran as follows, the first two phrases being obliterated:—

". . . . et hild uxoris ejus qui hoc opus fieri fecerunt quorum animarum proficietur deus amen. Quod opus factum erat et finitum anno domini millimo quinquagesimo duo decimo cui sit gloria laus honor et majestas amen."

Unfortunately the names of the donors were lost, save that Hilda was apparently the Christian name of the wife. The date is given as 1402 in Neale's copy of the inscription, and the style of the screen when perfect seems to render such a date possible; but the Dawson Turner drawings make 1512 more probable. So far as letterpress can do it, some idea of the original brilliancy and beauty of this screen (according to the Dawson Turner drawings) may be gathered from the bare enumeration of the successive colourings of the mouldings of the lower part of the screen, where the solid work above the painted panelling begins, a space of less than a foot in width:—(1) Blue and gold, in "barber's pole" design; (2) gold, with pattern; (3) green, with cinquefoils and connecting sprays in gold; (4) gold, with pattern; (5) red, with alternate fleur-de-lis and sprigged roses, scolloped at the edge with green; (6) band of inscription, gold centre with diagonal ribbon strips bearing gold lettering on blue ground, with edging of red, blue, and gold; and (7) broad band of plain gold. Immediately beneath this were the canopy heads for the saints, each one differing in colour and design. The patterns of the diapered gold backgrounds of the saint-panels were exquisitely rendered on a minute scale, with almost microscopic finish.

The screen of the north aisle, according to the Dawson Turner drawings, has in the lower compartments four saints. They are, beginning from the left:—(1) St. Bartholomew, (2) St. Philip, (3) St. Lawrence, and (4) St. Xystus (St. Sixtus) mitred, holding in the left hand a cross, whilst on the fingers of the right hand extended in blessing are two gold rings, and on the thumb a third.

The screen of the south aisle, from the same source, has these four saints:—(1) St. Peter, (2) St. Paul, (3) St. John Baptist, (4) St. Stephen.

The stairs for gaining access to the rood-loft are in the wall at the east end of the north aisle. When these screens were in use, there was evidently a passage over the canopy work to the central screen from each aisle screen. At the north-west angle of the same aisle is another stair turret, doubtless constructed for readily reaching the roofs.

The rood-screen and its auxiliaries were again, unfortunately, touched up, and a certain amount of saint-painting restoration attempted in 1838, a year in which a good deal of other damage was done to the interior of the church. Again, in the third quarter of the nineteenth century, a worthy old official of the church (in conjunction with an archæological (?) curate), from the best of motives, worked sad mischief with this ill-fated screen, as they were, unfortunately, gifted with certain moderate faculties for painting and carving. The panels of the central screen were taken out, much altered, re-arranged, and named below in large lettering. It is now hardly possible to imagine that this comparatively poorly-painted screen is the same that was so beautiful in diverse colouring at the time of the Dawson Turner drawings, which were executed by Mrs. Gunn, the wife of a former vicar of Irstead, and daughter of Mr. Dawson Turner. Mrs. Gunn was a great friend of Mrs. King, the wife of the Vicar of Worstead, and frequently stayed in the village.

So far as the rearrangement of the saint-panels is concerned—the two obliterated ones have been supplied—they now run, from left to right according to their painted names:—(1) Vir Doloris; (2), St. Paul; (3) St. James Less; (4) St. Philip; (5) St. Simon; (6) St. Jude; (7) St. Matthias; (8) St. John; (9) St. Andrew; (10) St. Peter; (11) St. James the Great; (12) St. Austin; (13) St. Bartholomew; (14) St. Jerome; (15) St. William; and (16) St. Wilgefortis. It will thus be seen, when compared with the 1833-4 list, that the saint-panels are so much repainted and altered as to be practically new. It was decidedly unusual to have pictures of Our Lord in such a position on rood screens, but the interesting correspondence of the Man of Sorrows with the Glorified Saviour in Nos. 7 and 15 of the original design was done away with, a new *Vir Doloris* was painted, and the original one placed at No. 15 and absurdly changed into the crucified boy saint, William of Norwich, of Anti-Semitic legend. A still more absurd transformation was that of the old man—probably St. Nestor, who is said to have been tied to his cross with ropes—into the curious virgin saint, Wilgefortis, whom legend says obtained a beard by prayer to save her chastity. It has now come to pass that these two particular panels attract the most attention from visitors, and actually appear in the later editions of Husenbeth's "Emblems," whereas they are in reality the result of semi-educated tampering with ancient work. The result of the various nineteenth-century paintings and re-paintings of these unhappy panels has been to practically deprive them of any artistic or archæological value. The interference with the saint panels of the side screens, which apparently were of less merit than those on the rood-screen, has been much less, though those of the north aisle have been rearranged, and there has been some touching up of them all since 1833.

There has also, unfortunately, been some tampering with the inscription; even the date has been touched up. The completely defaced opening words were painted in by the aged official or the curate who supplied the new names to the saint panels, and the screen is now assigned to John Alblastyr and Benedicta, his wife. Apparently this is a mere guess, on account of there being a short brass inscription on a panel near to the screen to John Ablastyr, 1520, and another to his wife Agnes, 1524. The substantial parts of the screen canopy were used up in repairs to the nave roof, whence portions, which now lie at the west end of the north aisle, were recovered in a quite recent roof restoration.

At the east end of the north chancel chapel of St. John Baptist (that on the south side was the Lady Chapel) are two large pedestals for images. The altar pace between them retains its original elevation. Above where the altar stood is the delicately painted wooden framework of a former reredos, a most interesting and unusual survival. In this chapel the guild of St. John Baptist used to meet. The old Elizabethan Holy Table now stands in this chapel.

At the west end of the church, under the tower, is a gallery, supported on slight but well-carved and painted wooden pillars and framework. The front panelling of the gallery, flush with the arch into the nave, is beautifully carved and painted. Immediately below it is the following English inscription in black letter:—

"This work was made in ye yer of God MCCCCCI at ye propur cost of ye cantell of ye chyrche of Worsted callyd ye batchellers lyte yt God preserve wt all the benefactors of ye same now and ever, Amen, than wer husbondes Christofyer Rant and Jeffery Deyn."

In Neale's account of this church, the last figure of this inscription was given, probably by a printer's error, as "l" instead of "i"; thus making the date 1550 (quite an impossible one) instead of 1501. This mistake has several times been copied, and it is worth while correcting it here, for the ornamental woodwork of this church is so exceptional and good, and tells so plainly of the art and feeling of the day, that it is a pity to have it falsified by half a century. The word "cantell" ("catell" with a contraction over the "a") has given rise to several differing surmises. Neale interpreted it as a form of the word "candle" and confused it with the bachelor's light of the next sentence, giving a learned note on the subject. Another scholar thought it was intended for "cattle" or stock left for a particular purpose to the church; for in some parishes cows as well as sheep were left by will to the wardens, who sometimes farmed them for particular church funds. Mr. Joseph Hunter, in the *Gentleman's Magazine* for 1833, explained "cantell" as a corner or angle, and thought that the bachelors

sat in that corner of the church, and that the bachelor's light meant the west window of the tower! More recent archæology does not seem to have settled the point; but in all probability Neale was right in regarding "cantell" as an equivalent for candle, and that there was a general voluntary rate on the bachelors or young men of the parish towards maintaining a special candle or light, and that the surplus funds were used for erecting this gallery.

With regard to the lights or candles of Worstead church, it is of interest to note from the general returns of gild ordinances ordered to be made in 1389, when this church had been in the main rebuilt, that there is a brief and hitherto uncited return from Worstead (Certificates of Gilds, No. 355, Pub. Rec. Office). The certificate states that John Skete and diverse other townsmen of Worstead had sustained in the church for the last twenty years, out of their devotion, three wax candles weighing 3 lbs. and two tapers, to burn at mass on all festivals, and that so soon as they had sufficient funds they intended to provide a chaplain.

Christopher Rant and John Deyn were husbands, that is wardens, of the Bachelors' Gild at the time of the erection of this graceful gallery. There used to be a brass in the church to Christopher Rant and Joan his wife, 1538. Some of these Norfolk towers were evidently designed for west galleries. Structural doorways from the tower stairway at the right level show that this was the case with the towers of Southrepps and Cromer; there are west screens at Aylsham and Causton. In Neale's plate of the font of Worstead (1823-4) this light gallery is shown, but there is no screen below it. In the elaborate series of coloured drawings of this church (1833) in the Dawson Turner collection the gallery front and inscription are given, together with a panelled screen below it. At the foot of the illustration the screen is described as "lately erected." From another source it is known that the figure paintings, after Sir Joshua Reynolds, were executed by Mrs. Gunn in 1831. The eight figures, singularly unsuited to their surroundings and but poorly executed, represent Faith, Charity, Fortitude, Patience, Learning, Hope, Justice, and Prudence. The two other narrow panels were adorned with emblems of the Virtues. Though it is usually supposed that Mrs. Gunn merely repainted old panels, there can be little, if any, doubt from the evidence just cited that the tower screen itself is merely of 1831 date. For that time it is a most creditable and unusual reproduction.

On the chancel walls are two painted consecration crosses of unusual size, being 2 ft. in diameter. There used to be similar ones on the walls of the nave aisles. A particular feature of the aisles is the large stone pedestal at the eastern end of almost all the window-sills. When these were filled with the images of saints, all looking west, they must have added much to the enrichment of this once lavishly-adorned church. Against the aisle walls are some remains of black-letter text adornments of Elizabethan days. Here and there small portions of the earlier wall paintings can be detected beneath the texts. Up to 1838 two most spirited old wall pictures of St. Michael and the Devil and of St. George and the Dragon were exposed to view; they are sketched among the Dawson Turner drawings, but were deliberately destroyed in 1838.

In the lower vestry are a collection of carvings, old books, and other curiosities, some of which have no connexion with the church. There are also a series of rubbings of brasses, mainly inscriptions that used to be in the church, but some have disappeared. The oldest is an inscription to John Ovy, who died in 1452. There is another inscription to Sir Robert Camounde, who died in 1490. Sir Robert directed by will that the floor of the chapel of St. John Baptist should be laid with marble stones up to the grave of John Ovy.

NOTES.

Trades-Unions' Workmen's Compensation Bill.

AN epitome of the contents of the Bill the Trades-Union National Conference is putting forward has been published this week, and it is almost impossible to imagine a more futile and ill-conceived Bill, if the epitome now before us accurately sets forth its terms. The only actual changes which it proposes in the law are such as to render all employers liable to compensate their workmen (we have not the definition of "workmen" before us), and in cases of incapacity from injuries sustained the assessment of the compensation, not on the average wages of the individual workman as at present, but on the "weekly wages or earnings of persons in the same grade of employment in the same works." The liability proposed to be placed on all employers of workmen is to pay compensation for injuries sustained in the employment "by accident or otherwise," and the Bill further provides that the employer shall not be entitled to set up the defence of "contributory negligence or any other defence." We commented last year on a Bill introduced containing such terms. It is perfectly well known that "contributory negligence" is no defence under the present Act, but that the only defences open to an employer are to show that the workman was either guilty of wilful misconduct, or sustained injury whilst acting outside the scope of his employment. The legal advisers of the trades-unions are no doubt well versed in the law, and the only assumption that can be drawn from the Bill being drafted in this form is that even the trades-unions hesitate to state in plain language that they desire to make the employers liable for injuries sustained "otherwise" than accidentally, the consequences of their workmen's wilful misconduct or acts outside the scope of the employment. Of the latter the Law Reports furnish useful examples, viz., remaining in a mine when told to leave it in consequence of a dispute with a superior, or meddling with machinery against express orders; which acts of mischief or disobedience, apart from actual wilful misconduct, are, according to the trades-unions' views, to entitle a man to receive compensation from his employer. The Bill contains a clause that when a workman has been incapacitated from following his employment, but can undertake other work, he is to be entitled to the "full difference" between such wages, but this is the law at present, except, of course, that this full difference must not exceed 50 per cent. of the original wages, or the liability of the employer would increase merely because the man was able to work a little. The Bill contains a clause prohibiting contracting out. As the only contracting out permissible under the existing law is where the Registrar of Friendly Societies certifies a scheme to be "not less favourable to the general body of workmen and their dependents than the Act," it is hard to see any necessity for this clause. Considering the difficulties experienced in the working of the Compensation Acts—difficulties only disappearing as the Act has been expounded line upon line by decisions on the cases—it is surprising to read a measure such as the above, introduced by a responsible body, containing provisions which, when they are not merely declaratory of the law as at present administered, can only be characterised as puerile.

County Council Economy.

THE continuous increase in the rates is the subject of much criticism and a cause of serious alarm to business men and other classes, yet daily increased burdens are laid on the ratepayers, whose patience can only be likened to that of the proverbial beast of burden, whilst such warnings and protests as they can give expression to are as futile as those uttered by Balaam's ass. It would be interesting to obtain the individual views of the members of this long-suffering class on the latest resolution of the London County Council to expend 10,000*l.* to secure 803 acres of land in Essex some thirteen miles from Charing Cross for the purposes of a public open space. To ratepayers groaning under the heavy taxation necessitated by the recent war and contending with depressed conditions of trade, this open space in Essex may appear to be a somewhat unnecessary luxury, involving not only this sum for the purchase money, but also large annual expenditure on its maintenance. But even weightier objections than these can be urged against this scheme. Much of this land is at present being profitably employed under cultivation, and much of it is available for building purposes. In the recent Report of the Council's Improvement Committee it appeared that, owing to the Holborn to the Strand Improvement, 6,738 persons had had to be displaced from their houses, and (although the Home Office scheme provides for the eventual housing of some 5,900 out of this number) a policy which removes the population from convenient centres, and which, at the same time, by securing land for purposes of recreation, enhances the difficulty of securing suburban building sites, seems to us one difficult to justify. The proposal, however, was carried by eighty-seven votes to seventeen, and as the present Council assumed power under a pledge to carry out a policy of strict economy it becomes equally difficult to understand either what influence is exerted by this pledge, or what the Council's policy would have been without it.

Municipal Management.

THE Report of the Sub-Committee appointed by the Bradford City Council to inquire into the desirability of instituting a Works Department in that city on the lines adopted in London and elsewhere contains matter of great interest. The Sub-Committee having inspected the Works Departments of the London County Council and those of

Battersea and West Ham, have recently made reports, and the majority have reported adversely to the institution of a Board of Works in Bradford. The results of this investigation on the part of the majority seems, shortly stated, to be that in architectural work the Works Department are unable to compete favourably in the matter of price with outside contractors, whilst the quality of the work done by the latter is equal to that of the Works Department. In underground work equality in quality, price, and wages, is attained by both. In West Ham, however, the Report observes a tendency to give certain payments and compensations, which bring the pay of the municipal employees above the standard of trade union wages, and the Report also gives some weight to the tendency the votes of the employees have towards attaining this end, especially in places where the proportion of municipal employees is large in reference to the population of the municipality.

A New Mississippi Bridge.

APART from the fact that it is the largest work of its kind under construction in the United States at the present time, the new cantilever bridge over the Mississippi at Thebes, Ill., is interesting because the approaches are to be entirely of concrete. The bridge, which was commenced about a year ago, will probably be finished early in 1904, and is designed to form a connexion between the systems of four railway companies, two on each side of the river. Including earthwork, the total length of the structure is 3,907 ft. made up as follows: Earthwork at east and west abutments, 342 ft. 4 in.; eastern approach, five concrete spans of 65 ft.; bridge spans, comprising two fixed spans, four cantilever arms, and three suspended spans, viz., central span of 671 ft., two side spans of 521 ft. 2 in. each, and two shore spans of 518 ft. 6 in. each; western approach, one 100 ft., and six 65 ft. concrete spans. The spans and panels are so arranged that only two lengths of panels are necessary, 32 ft. 6⅞ in. and 30 ft. 6 in. Both the fixed spans are alike, as are also the cantilever arms and the suspended spans. The height of the bottom chord is 65 ft. above high-water level, and 103 ft. above low water. The superstructure is carried upon six masonry piers, backed with Portland cement concrete, and founded on bed-rock by means of pneumatic caissons, with the exception of the last pier on the western side, which was founded in open excavation. According to the engineers' estimates, the cost of the entire structure will be about 520,000*l.*

Assisted Circulation in Hot-water Pipes.

ALTHOUGH the gravity system proves itself to be thoroughly efficient in all ordinary examples of hot-water apparatus, it has entirely failed to give satisfactory results in very extended and complicated installations. Of course, the inexorable laws of Nature ensure circulation in every system of the kind, but not necessarily to the required degree throughout its various ramifications. Much may be accomplished by employing pipes of ample diameter, by suitably proportioning the main and loop circulations, and by fixing all pipe fittings in the most appropriate manner. But even then the result may not be altogether satisfactory. Various devices have been introduced for the purpose of assisting circulation. One, which is extremely useful within certain limits, consists of a special fitting having an internal nozzle capable of adjustment so as to partly divert the flow of hot water from a main into a branch circulation, and to facilitate the delivery of partly cooled water from a branch into a main return pipe. Another method involves the employment of a pump, by the aid of which circulation is assisted or maintained entirely by mechanical means. This device was first employed at a large building in London, after all other means had failed to ensure complete and satisfactory circulation. A system of somewhat similar nature makes use of steam injectors fixed in such manner as to heat the water circulating through a building, as well as to furnish the motive power for assisting circulation.

Farm Cottage Holdings.

WE have received from Mr. Buchanan a pamphlet which he entitles "Farm Cottage Holdings," the main purpose of which is to advocate the establishment of freehold cottages with a small amount of land attached to them in the rural districts. There can be no doubt that if it were possible for the most energetic of the agricultural labourers to be able to secure a cottage and a holding of their own it would be a great incentive to the continuance of the best class of rural workers in their own districts. It is obvious, however, that freehold cottages cannot be obtained by ordinary labourers except in some rare cases under present conditions. The ordinary landlord will not build cottages to sell, and in most cases it is not possible for a poor man to pay in other way than by instalments. No doubt there has been legislation bearing on this question during the last ten years, but at present there is no system sufficiently simple and easy. Unquestionably this is a difficulty which cannot quickly be got over, and it probably will not be surmounted until the Board of Agriculture has the power to lend money for the purchase or building of freehold cottages by rural labourers. At the present moment County Councils are far too conservative and too averse to the labourer to be trusted with any scheme of the kind.

The Abbey of St. Mary, Buckfastleigh.

THE recent appointment of Abbot Natter revives the ancient dignity of an abbey which was founded originally for Benedictines *temp.* King Edgar, and was refounded in Henry II.'s reign by Ethelward de Pomeroy, who rebuilt the convent for some Cistercian monks brought from Savigny in Normandy. The abbey held large possessions in the vicinity of Kingsbridge, and Ashburton, and elsewhere; the revenues were computed at 466*l.* 11s. 2d. at the time of the Suppression. The buildings then fell into decay, and then for a long while served as a common stone quarry. In 1805-6 a residence, since occupied by the religious community, was built with the stones over a Saxon crypt on the west side of the ruined cloisters. Twenty years ago the site and remains were purchased by a band of Benedictines from Pierrequirire, Burgundy, and shortly after their arrival the gradual reconstruction of the abbey upon its former lines was begun, mainly through the instrumentality of Lord Clifford of Chudleigh. Mr. Frederick A. Walters, F.S.A., superintended the excavation of the site, and made designs for the new buildings after the style of the Transition period, which he found was the character of the older portion of the former structure. He also carried out a restoration of the Abbot's tower, which stands at the north-west corner of the cellarium, and is remarkable in that it was found to contain three latrines, the one above the other, in a fairly perfect condition. The tower, a four-storied building after the Perpendicular style, formed, it is conjectured, the residence of the master of the lay brethren. In our number of October 30, 1886, we published Mr. Walters' plan of the old convent and the foundations, with a two-page bird's-eye view of the new works. Pending the restoration of the Abbey Church, a small church dedicated to the Immaculate Heart of St. Mary was erected on a site near the west side of the Abbot's tower.

Paintings in Solid Oil Colours.

A COLLECTION of pictures, mostly by eminent artists, is on view at the Holland Fine Art Gallery in Grafton-street, which are executed with the solid oil colours invented by Mr. Rafaelli. This is a method of putting oil colours in small solid sticks like crayons, which can be used direct on the canvas without any trouble in mixing colours and cleaning brushes. At first sight this seems like a revolution in oil painting; but we are by no means so sure that it will be adopted to the extent that some critics and painters seem to expect. The pictures painted in this new medium by various artists, English and foreign, have a rather hard dry appearance, somewhat like pastel, though without the destructible nature of pastel. Something of the appearance of an oil painting made with the ordinary medium can be imparted to these pictures by varnishing, as is seen in one or two examples in the collection at the Holland Gallery. But while the solid oil-colour pencils will no doubt be of the greatest use for sketches and studies, we are inclined to think that for the highest class of pictures the brush and colour-tube will still hold their place.

New Pictures in the National and Tate Galleries.

NEITHER Nasmyth nor Both were landscape-painters of the first force, but the National Gallery has been fortunate in the examples of the two painters which have just been bequeathed to it, for each represents the artist at his best. Both's "Italian Landscape" (Room X.), left by Lord Cheylesmore, is a large painting repeating general elements of composition which are familar in his works; but it is a fine example of the particular effect of warm sunlight which the painter loved and devoted himself to. Nasmyth's "The Severn off Portishead," from Mr. Gassiot's collection (Room XX.), is also a large work—much larger than usual with Nasmyth; and in spite of the hard painting of the trees and the rather cold and steely colour of the foreground, it is a work showing most conscientious labour, and the distance is fine. The two small works by Van der Heyden, hung in Room XII., are admirable specimens of his peculiar delicacy and finish in the painting of Dutch architecture of the Renaissance type. The most important of the new works which have been announced in the daily papers as having been placed

in the Tate Gallery—viz., Delaroche's tragical picture of the execution of Lady Jane Grey, turns out not to be in the gallery after all, having been sent to be reframed. Of the other new works, the two pictures by Phillip have the artist's usual characteristics; one of them, "The Prison Window," has been popularised by engraving, and is a very good example of his work; but one cannot in these days get very enthusiastic over Phillip. The two pictures by Collins, "Sunday Morning" and "Cromer Sands," are of considerably more interest. Collins was an always truthful and feeling though rather quiet landscape-painter, but in these two examples, and especially in "Cromer Sands," he shows a power of effect beyond what is usual in his pictures. "Sunday Morning" was the subject of an engraving published many years ago in the old series of the *Art Journal;* "Cromer Sands" we have not seen any reproduction of. It is not topographically very exact; he has exaggerated the scale of the cliffs: but it is a fine landscape.

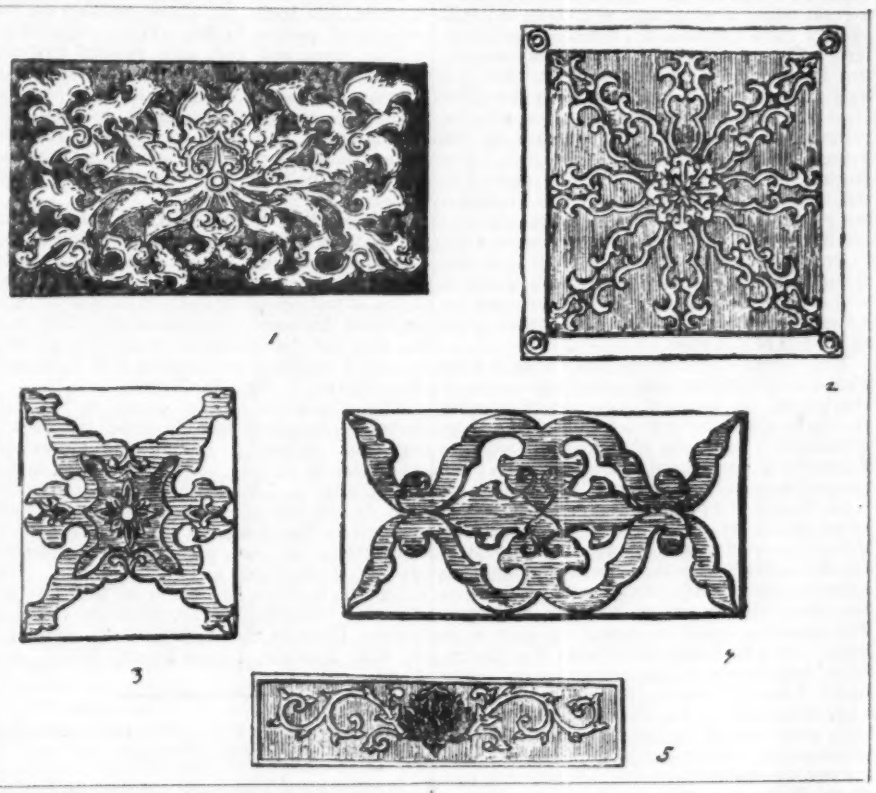
THE DECORATIVE ART OF THE JAPANESE.—II.*

TEMPLE DECORATION.

I PASS now to the more severe ornament which is to be found in the Buddhist temples, and which I think may fairly be called the religious decorative art of Japan. When I say that this ornament is drawn from the Buddhist temples of Japan, there will at once be conjured up in the mind's eye first an innumerable array of stone lanterns; then an elaborately decorated gateway; a courtyard surrounded by a low wall of open woodwork; in the centre on a raised platform a squat building surmounted by a very large roof of shingles, whose exquisite curves, as I think, owe their catenary character to a tent, for they reproduce faithfully the sag of both tent roof and curtain; and inside gloom, through which, when the eye gets used to it, appears such a wealth of decoration that it is practically impossible to decipher, much less to remember, any of it; and beyond the temple the shrine, and beyond the shrine, in absolute quiet and peaceful repose, the tomb; and all around the colossal trunks and wonderful foliage of the cryptomerias. At Shiba, in Tokyo, there are six such temples, and at Nikko two, all of them erected to the memory of the great Tokugawa Shoguns. From these temples all these studies of decoration were taken. I cannot pretend that I have exhausted the subject; for though I have drawn at two of the chief fountains, the Kyoto temples and many another remain to be ransacked. I cannot even hope to exhaust my sketch-book. I must, therefore, try to be typical rather than exhaustive.

To put my readers completely in touch with the home of this decoration, I have further to ask them to remember, or imagine, the temple building to be of lacquered wood, and every square yard, foot, and inch of it, seen and unseen (for the way of the Japanese artist often is to put some of his best work where human eye may not see it without considerable difficulty, and copying it is out of the question), literally smothered with ornament, carved, painted, inlaid, high relief, low relief, silk-weaving, metal-chasing—produced, indeed, by every means which human skill has devised for the making of things so beautiful that they are worthy of a place in a shrine of worship. The puzzle which this work presents is that the character of some of it—of a great deal of it, indeed—has little or no affinity with Japanese decoration as generally understood, and the problem is whence came the inspiration. Some of the designs are essentially Eastern, many of the forms of the cloud and wave patterns will be found to be perfectly familiar. Then again many of the diapers will be recognised by those who have some knowledge of "curios," for they are often used on lacquer, silk, porcelain, and metal. And yet again the conventional forms of some of the flowers will be an indication to many that these designs come from Japan; to the learned that there is a Chinese home for some of them. Another erudite student will possibly trace the origin, or at least the execution, to Japan, guided by certain subtle sweeps of the curves, and the pervading art instinct, which can lead him to no other conclusion. But beyond all this there are many designs—specially a whole class of lattice work, which must form the subject of a separate article—which present even for the student a problem which I cannot pretend to solve in any other way than by the merest suggestion. The fact is that there is a great deal of this work which shows unmistakable traces of an inspiration which is not Eastern at all.

The following are typical of a great mass of ornament, the most remarkable from the point of view of the derivation problem being No. 4. It might be said to be almost Tudor in its inspiration, but it would plunge us too deeply into disquisition to follow out the many trains of thought which the suggestion calls into being.



I take first in order from my sketch-book the diapers, which may be divided into three distinct classes—pure line; floral derivative; symbolical. The illustrations this week are examples of the first two classes (see lithograph plate).

The elements which the artist has to work with are—first, line, with varying length, breadth, and curve; secondly, angle; thirdly, colour to heighten effects. With these he produces decoration, breaking up the flat surfaces which the eye abhors—sometimes formal, sometimes full of the grace of flowing curves, but line for line's sake. And for his good use of these materials Nature thereafter comes to his aid with floral suggestion. So far the designer produces flat ornament only, using the brush, or its equivalent, as his only tool. But presently he takes to the chisel, and then increases his stock-in-trade, the element of relief, high and low, with consequent effects of light and shadow. There is a great deal of flat colour decoration in the temples, but the designs are, for the most part, elaborate. The diapers which are used for covering large surfaces, such as panels to doors, pillars, walls, are almost invariably in relief. The lines are cut as with a triangular chisel, the result being—more especially if the work is in crimson lacquer, or gilded—a bewildering light-scattering effect, in which the design is almost lost sight of in the general effect. It seemed preferable to let the illustrations take the form of sketches of the effect of light and shadow, rather than mere formal flat representation of the lines which form the design.

What is known in the West as the "basket pattern" is frequently met with in Japan; fig. 1 (see plate) is an elaborate example of it. Fig. 2 is also a common design, used by itself or as a background as in fig. 3, and developed into a more elaborate diaper in fig. 4. Figs. 3 and 4 are illustrative of a class of work frequently met with; this diaper is lightly incised and carved with white lacquer; this forms the background for independent ornaments, which are carved in brown wood, and fastened on with brass nails. The idea of a series of developing lines, which in fig. 2 is applied to a point, in fig. 4 to a combination of four lozenges, is the basis of the elaborate diaper (fig. 5), which produces, by the inversion of the unit in every alternate line, the form shown in fig. 6. These designs are, of course, constructed on the hexagon points of the circle, and are really composed of hexagons with the alternate angles re-entering. Fig. 7 is taken from a column, which is of brown lacquer very deeply incised. The effect in fig. 8 is dependent mainly on various thicknesses of wood. Fig. 9 is in red lacquer in moderate relief. The design seems to have been suggested by a fan; it is unusual in its character, and I have not come across any other of a similar nature. In fig. 10 the design is made of shallow-cut gold lines on dark brown lacquer. Of the zigzag lines I shall have something to say in a subsequent article.

It will probably surprise some of my readers when I say that in fig. 11 we come to a design which is dependent on natural suggestion. It is known as the pine-pattern, and if the conventional treatment of the pine sprays already noticed in previous articles be remembered, the evolution of this pattern is easy to trace. The effect of light and shadow caused by the deep carving is, of course, accountable for the number of lines which appear to radiate from each centre; there are in reality only four spines going to each of the sides of the hexagon which is used as the base of the design. In fig. 12 the pine character of the design vanishes, giving place to a star form, which is emphasised by every alternate spine being omitted, the space being left flat and coloured. It is a strip of fig. 11, cut diagonally. In fig. 13 the star form is further developed and treated as a separate unit of design. The floral form is surrounded by six stars, which are inscribed in the hexagon circles, in the same way as in fig. 19. The lilies of the hexagon are carved as in fig. 18, the suggestion here being of a band of cotton or other material surrounding the flower and gathered into knobs at the hexagon points.

In fig. 16 we see the first stage of the conventionalising process as applied to the peony, the outline of the petals still retaining their natural flow, but the lines are becoming more rigid till they reach the form given in fig. 14, which is the ultimate form of the conventional flower. The shape here given to the petals is the classical convention of leaf form which appears in much Eastern work. It will be

* See page 8 *ante*.

seen in some of the illustrations given in the text of the first article, and gives the character to the petal of the flower in fig. 18.

The remaining figures do not require special reference, except that the peony of fig. 16 and the chrysanthemum of fig. 17 are repeated in every panel of the diaper. F. T. P.

LETTER FROM PARIS.

THE circular line of railway from the Etoile to the Place de la Nation, which was finished as far as the Place d'Anvers, has now been opened from there to the Rue de Bagnolet. The new section includes eight stations:—La Chapelle, Le Combat, La Villette, Belleville, La Rue des Couronnes, Ménilmontant, L'Avenue Philippe Auguste, and Bagnolet. It will be a great public convenience, especially as it will shortly have a station at Père Lachaise cemetery. The municipality has opened a competition for the design for the metallic portion of a viaduct to be placed across the Seine above the Pont d'Austerlitz for the passage of the circular railway, which will follow the line of the former outer boulevards of the left bank. The works are a great interruption at present to the ordinary street traffic, but this is only a temporary inconvenience. A large *chantier* has been opened in Rue Auber, opposite the Opera Library, which quite shuts out the Garnier monument, the inauguration of which will probably on this account be postponed for a long time, though it was to have taken place at the end of last year.

The Opéra Comique is now entirely completed, and the temporary gas chandeliers on the façade are replaced by candelabra with porphyry shafts decorated with bronze leafage ornament. These are fine pieces of work in themselves, and harmonise well with the general style of the building.

M. Weerts, the painter, who is the author of some important decorative works, especially the ceiling of the large museum apartment at the Hôtel des Monnaies, is just completing an immense composition which will be fixed in the Cour d'Honneur of the new Sorbonne. The picture, which measures 24 mètres in length by 4 in height, represents the "escholiers" taking part in the celebrated university fête of "Lendit," which, in the fifteenth century, was held in the Plaine St. Denis. The long procession of students is treated in a very picturesque manner, with the richness and variety of costumes of the period, and surrounded by a motley street crowd pressing before the Cathedral of St. Denis to greet the rector, who visited the church in state, preceded by heralds.

The Municipality intend to form, on the site of the former Cirque des Champs Elysées, an ornamental lawn and flower-beds, in the centre of which will be an equestrian statue which formerly decorated the front of the building. This statue, representing an Amazon, was the work of the late celebrated sculptor Pradier, who also, along with Bosio, executed the two equestrian statues which decorate the façade of the Cirque d'Hiver, in the Boulevard des Filles du Calvaire, which is actually the oldest of Paris Theatres now existing. It was built more than fifty years ago from the designs of Hittorf, who entrusted the decoration of the building to a number of distinguished artists, of whom the only survivor at the present moment is M. Guillaume, the Director of the French Academy at Rome.

The Société Nationale des Beaux-Arts ("New Salon") started by doing away with all gold medals &c., which at the Old Salon had led to such keen competition and to so many complaints—not always without cause—of injustice and partiality. In this latter society the suppression of medals has been agitated for by M. Zwiller, a painter who is always ready for a fight, and who recommends the substitution of diplomas. Among other arguments, it is urged that the saving of the cost of the numerous medals annually given would create a fund which might be much better applied to the relief of artists in needy circumstances. The question will be submitted to the Assemblée Générale, which will give a final decision on the subject.

M. Redon, the architect to the Louvre, has under consideration a scheme for the enlargement of the museum, which will permit of the exhibition of important collections which are still unknown to the public for want of space to exhibit them. He proposes to organise a certain number of exhibition galleries in the second story of the palace, to be reached by a new staircase which will also give access to the Salles Lefuel, and will replace the narrow wooden staircase leading to the Musée de Marine. By this means room would be found for the exhibition of twelve to fifteen thousand drawings, reserving the first floor galleries for paintings.

In this connexion we may mention the recent opening at the Louvre of the Thomy-Thierry Galleries, in which are collected many remarkable works by Troyon, Decamps, Fromentin, Delacroix, Isabey, and other artists of the earlier nineteenth century period, brought together by a collector of great judgment and insight.

The Municipal Council, in the ensuing session, intends to consider the main heads of a new series of sanitary regulations which will become the basis of future by-laws on the subject of public health. These regulations will be concerned both with general hygiene and with the prevention of the transmission of infectious disorders. They will be of special interest to architects, inasmuch as they will deal not only with street regulations but with house construction and the obligations imposed upon both builders and proprietors of Paris houses.

An exhibition of artistic ivories, to be opened in May, is now in active preparation at the Galliera Museum. It will include not only modern French work of this class, but also Colonial and especially Indo-Chinese work. It is expected that some fine private collections will be lent for the occasion, especially a very remarkable collection belonging to M. Corroyer, the architect to Mont-St.-Michel.

The exhibition of the Cercle de l'Union Artistique (formerly the "Cercle des Mirlitons") has just opened. Among the prominent exhibitors is M. Jacques Blanche, who, along with the late J. Lewis Brown, was among the first to call the attention of modern French painters to the works of the English school, and who in his own paintings is obviously a student of Reynolds and Gainsborough. The exhibition includes also works by MM. Roybet, Chartran, Carolus Duran, Bonnat, Gérome, Gervex, Cormon, &c., together with sculpture by MM. Gérôme, Denys Puech, Verlet, and Crank.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

A MEETING of the Royal Institute of British Architects was held on Monday in the Meeting Room at No. 9, Conduit-street, Regent-street, W., Mr. Aston Webb, A.R.A., President, in the chair.

The Royal Gold Medallist for 1903.

The minutes of last meeting having been taken as read,

The Chairman announced that the Council proposed to submit to his Majesty the King, as a fit recipient for the Royal Gold Medal for 1903, the name of Mr. C. F. McKim (Messrs. McKim, Meade, & White), of New York, for his works as an architect.

The announcement was received with applause.

The Wellington Monument, St. Paul's.

The Chairman said there was a matter which was interesting a good many people just now, *i.e.*, the Wellington Monument, St. Paul's, and he thought there were few people more interested in it than architects, for the monument has a quality which was specially appreciated by architects. The Council of the Institute have had the matter under consideration that afternoon, and he (the Chairman) had been requested on their behalf to express a hope that, as they understood that the equestrian statue of the Duke by Stevens was in such a condition that it can be placed on the monument for examination and consideration before anything further is done, they hope that that course will be undertaken, so as, if possible, to ensure that the work is completed without the intervention, if possible, of any other hand than Stevens's.

President's Address.

The Chairman then delivered the following address to students:—

BROTHER STUDENTS,

Ever since I undertook the responsibilities of this chair, it has been present to my mind that it would be my duty and privilege to address you this evening, and I have wondered if there was anything that I could say that would be of use or help to you. The experience of one man, valuable to himself, is seldom of value to another, especially if the other be a younger one, and in art, perhaps, this is more true than in any other career; each must work out his own salvation, and a stranger cannot intermeddle with his joy.

I am not speaking to-night especially to those who have just entered for the various prizes and studentships yearly offered by this Institute. This has been kindly undertaken by Mr. Walter Millard, who is especially qualified for the task and is sure to fulfil it conscientiously and generously. I am speaking to students generally, students of what I think we rightly consider the greatest and noblest of the arts, the art of architecture, the most abiding and the most useful of the arts. Those of us who heard Dr. Evans's recent paper on his exploration of the Palace of Knossos in Crete must have felt this as he laid bare before us the work executed by men some 4,000 or 5,000 years ago.

In addressing you students I shall endeavour to give you in the briefest and most condensed manner possible the main lines on which, as it appears to me, a student of architecture should endeavour to prepare himself for his work. One thing I would first ask you on the threshold of your career:—Are you quite sure you have chosen aright? No one can tell this so well as yourself, and you will probably by this time have had sufficient experience of what this career means to form a sound opinion, and I advise you deliberately, if you have any doubt, to throw it up *now*; you will be none the worse, but all the better for the training you have had, and you will find it useful in other careers. If, on the other hand, you determine to go on, decide at the same time never to look back again. It is a career beset, of course, with difficulties, and one that requires a lifelong training to enable you even to keep your place in it. Remember, this training must be irksome to all who have not their heart in the work, and it will shut you out of many pleasures you will see others enjoy; it is so engrossing that you will inevitably find yourself becoming, to some extent at least, a one-sided man, a contingency which certainly should not by any one be lightly assumed. But, on the other hand, if your heart is in it you will find the ever-varying character of your work a never-ending delight, carrying you to many places and bringing you into contact with all sorts and conditions of men, a delight which cannot be excelled, and indeed can hardly be equalled, I think, in any other callirg.

But to arrive at this you must follow it with patience. Some young men seem to expect to attain success as soon as, or even before, they are out of their articles: the majority are necessarily doomed to disappointment. Work, you will find, is necessary, and that work must be lifelong; there is no success or happiness without it. When a young genius was brought to Ruskin, his first question always was, "Does he work?" A clever man, he says, may be indolent, but a great man never. It is probably the ten years succeeding pupilage that are the most important in the life of most architects, and will be the all-important ones in yours. How will you use them? Then you will begin to rely upon yourself and teach yourself, and cease to rely upon others—a very important difference. Mr. John Morley said a little time ago, in a speech of his, "What a splendid thing a man might make of his own life!" He did not add, because I suppose it is so evident, "What a poor, miserable thing he often does make of it!" It is for you to decide to make a splendid thing of yours. Start with high ideals, for they will be sorely tried. A famous painter told a gathering of students a short time ago that he never painted a picture that realised the ideals he had started with; and if this is true of a distinguished painter, how much more true of lesser men!

Many years ago I read a paper on "Pupilage" before the Architectural Association, and after the paper a gentleman got up and was kind enough to say I had given them many useful hints as to how to do their work, would I now give them a few tips as to how to get it? But that was not part of my subject then, nor is it now. I will only say this, that if you take care to prepare yourselves and do the work that lies nearest to you as well and as thoroughly as you can, the work will come to you and you will not even have to trouble how to get it: the way you do what does come to you is the all-important thing. Remember Carlyle's descrip-

tion of common journey work well done for want of better.

I shall take it that most of you here to-night have completed or are nearing the completion of your articles, and are about to commence your professional life in one capacity or another. You have been, therefore, through a course of systematic instruction—most necessary and most useful, if a little dull—and you are now about to take a higher flight, urged, let us believe, by an ideal impulse. Do not clip your wings; the head has been educated, now it is the turn of the heart. We will assume you have got knowledge. But with all your getting you must get understanding, get to the bottom of things and understand them. A well-stored memory is not the chief essential for an artist, though it is of great value to him. Cultivate curiosity and observation, and leave nothing unexplained. Now is your time. Some grow old without gaining any experience, through never having learnt to observe. Learn now how to learn, or you will never do it, and lead the "strenuous life." Do not be afraid of overwork; the number of people who overwork themselves is infinitesimal; the chances that you will be one of them are hardly worth taking into account.

I would recommend you, for one thing, to know as many artists of about your own age as possible, architects, painters, and sculptors; meet together as often as you can, talk what is called "shop" with them, visit buildings, paintings, and sculpture, old and new, together, criticise these things together, admire where you can and give your reasons, and when you must condemn, give your reasons also; get all you can from your friends, and give them all you can in return. The Royal Academy Schools, this Institute, the Architectural Association, and your own office, will give you ample means of doing this, and you will make friends that will last your lifetime, and as difficulties arise in your work you will go to them for advice and counsel, and as occasion arises they will come to you for the same.

You will read, of course, "a lot." A very successful artist friend of mine (not an architect) once told me he had always made a rule of reading not less than five hours a day, and he was a very busy man. Few of you can do that, perhaps; but start with a high ideal and map out a certain time every day for the purpose. You will have already read your text-books, your Fergusson, your Middleton, your Viollet-le-Duc, and so on, and now you will read more of the romance of architecture, the story of the building of St. Sophia, of the Duomo at Florence, of St. Peter's at Rome, and St. Paul's in London; the lives of great architects, painters, and sculptors of all generations and countries; how they looked at their art and the principles that guided them in the execution of their work; you will read your Ruskin, and in fact all the literature in connexion with your art that you can lay your hands on (and there is no difficulty in that respect nowadays), for remember that your clients will expect you to know a great deal more about art in general and your own in particular than they do, and you must not let it be said of you, as a late Bishop of London said of a certain architect, that he had sat next to him at dinner and was astonished to find that he (the Bishop) knew more about the Parthenon than the architect did himself! Then, of course, you will sketch existing buildings, new as well as old, and try to get at the principles of their design and construction. In my day we used to sketch and measure an arcade, a doorway, a font, or other detail easily accessible, draw it out prettily and publish it in the Architectural Association "Sketch-Book," and, I am afraid, remain oblivious of the points in the plan, elevation, and section of the building which produced the result we admired but did not understand. You will, I do not doubt, make a rough note of the plan, elevation, and section of the building you are studying, and put on the leading dimensions, noting the thickness of the walls, the amount of lighting area, &c., and any distinguishing features this analysis brings out.

Thus you will learn the real vertebræ of the building, although you will probably have no notes fit for publication; but you will know your building in its three dimensions; and you will be surprised, if you continue this plan, how it will give you a grasp of the general conception of buildings, which is what an architect should endeavour to arrive at. The detail is important—vitally important—but the conception is the principal thing; and as you come to design buildings yourself you will think of them in the same way as cubes, not as planes, and, having learnt what feet look like in existing buildings, you will at once understand what they will look like in your own buildings when they come to be realised from paper structures to real brick and stone. The great buildings of the world are admired because their dimensions are noble and proportionate the one to the other. You will, therefore, never rest till you have obtained this rhythmical music of dimension.

Then you will not think construction beneath your notice. It is at the root of all great architecture. Wren was a great constructor, the founder of the Royal Society, an inventor of scientific instruments, and a scientific man. Go into St. Paul's and stand under the dome and think; go up into the spire of Salisbury Cathedral and think a little, and realise how greatly daring were the men who designed and erected these structures so that they have withstood the thrusts, the storms, and natural decay of centuries, and remain the admiration of mankind. Then you will also study materials—those that look well in work from colour and texture, and that weather well and improve by time. It is impossible, again, to exaggerate the importance of this towards a satisfactory building. You will also (if you are wise) keep a commonplace book and jot down dimensions of things as they come under your notice, because it will save you much time and trouble later, when your hands are full and your time can be better employed than in hunting these matters up. And with regard to the drawings you send out to the works, you will remember that *what* you show is far more important than *how* you show it; and so you will make your drawings as practical as possible, and write all instructions on them the workmen are likely to require; and you will be comparatively unconcerned as to how your building looks on paper, provided you can see in your mind's eye it will look well in reality. An architect's work is his building, let him produce it how he may. The beautiful drawings of the late J. F. Bentley, shown here a short time ago, had never been seen before, his one desire being—so Mr. Ingress Bell, who knew him well, tells me—that he should be known by his work and nothing else.

I have not, even now, enumerated half the branches of study in which you will have to instruct yourself, but, lest you should feel it an impossible task, I may say that you will find, as you master first one and then another, these subjects will dovetail one into another so that you will gradually, perhaps almost unawares, become a well-informed man. Then you will travel, of course, when the opportunity occurs. The caution given in this room by Sir Lawrence Alma-Tadema a short time ago did not apply, you will see, to foreign travel generally, but to travel undertaken too early in your career and before you know your own country. And then, in addition to all this, you will practise scrupulous integrity towards your employer, employed, and professional brethren, and you will never do anything you would prefer your client not to know about (for that is a safe rule when you are in doubt). You will, I am sure, endeavour to be courteous, upright, and modest in all your work, not always seeking your own advantage, and so you will raise yourself and your calling and become what we call an English gentleman.

You will not, if you are wise, be content to let your art stay where you found it, but you will go on and on and carry it, as far as in you lies, a step further; you will become a "true lover of the past who does not scorn to take good heed to what the future saith," and so you will not work in vain. It is easier, I know—no one better—to say all this than to do it. Nothing worth doing was ever yet easily done; lifelong work is required, and I end, as I began: you will do no good thing without it, and get no enjoyment either without it. The possibilities of life are nearly endless, and they depend mainly on yourselves. Remember that the pursuit of architecture is a serious pursuit. Some buildings seem as if put up for mere fun; you will not treat your art so, I am sure. Play and fancy in the detail there may be, but the main structure must be sober, with an evident idea to impress or to attract. Ruskin tells us "it is sympathy and imagination that make the artist." Cultivate, therefore, both, and you may leave behind you something that has been worth the doing. And doing is the principal thing—don't think over much, but try.

Mr. Walter Millard, Pugin Student of 1879, then gave a short criticism of the designs and drawings submitted this year for the prizes and studentships. In the course of his remarks he said the subject set for the Essay Medal was "A Comparative Review of the various Past and Present Systems of Architectural Training at Home and Abroad," and it had a very special—we might almost say a vital—interest for us, now in particular; and one can only hope it may have attracted competitors qualified to treat it adequately in spite of the rather vast comprehensiveness of the title. He had not had the opportunity of reading the essays; but he would point out that any review of the subject could scarcely fail to note the far-reaching fact that as a corporate body, "for the general advancement of civil architecture and for promoting and facilitating the acquirement of the knowledge of the various arts and sciences connected therewith," this Institute bears no direct or active part in the work of teaching and training recruits to our profession; but leaves them, in this respect, to the ministrations and mercies of anybody who undertakes "to teach and instruct, to the utmost of his skill and knowledge, in the art and profession of an architect—in consideration of, &c." Rightly or wrongly, the Institute does not train; it provides the course, the hurdles, and the water-jumps. In the exhibition just held we have had brought up before the Institute, for trial and judgment, some results of architectural training obtained elsewhere—and anywhere, training for which the Institute as a body assumes no responsibility; acting rather, so to speak, as a fountain of honour. . . . . As to the Measured Drawing Medal, considering the immense value, in more respects than one, of the faithful delineation of still-existing examples of our old architecture, of all dates, might it not be worth while to increase the sum of money now awarded with this medal, from ten guineas to something more nearly approximating to the bare value of the labour and draughtsmanship required to portray worthily a good subject—as in the case of most well-conducted competitions nowadays? . . . . "The subject for the Soane Medallion being a 'Design for a Town Church' on a corner site of 140 ft. by 90 ft., the attention of competitors was called to the remarks on church planning in Sir William Emerson's Presidential address of 1901. This, alas! seems to have proved indeed what Burges would have described as 'strong meat for babes'; at any rate, about one-third of the twenty-one competitors, several of the ablest among them, appear to have considered themselves thereby licensed to arrange for the choir of a modern church—presumably a parish church, whose choir would hardly consist of individuals 'in orders'—to sing away by themselves up at the extreme east end of the building, having in most cases interposed between them and the congregation the altar, backed in one instance by a high reredos, and surmounted in others by a big, four-legged baldacchino. But, waiving discussion of this question, let us view the designs themselves. . . . 'New Era' shows a well-made effort to put into good form, in his own way, on this particular site lessons learnt—in the best sense—from Bentley's Westminster Cathedral; learnt from a building rather than from books, the way good work ever was done. The plan skilfully utilises every inch of the site, and, but for the debatable position of the choir, would work admirably, whilst producing a striking and even impressive interior, in spite of the unavoidable shortness of the whole building. Externally the author has had the happy audacity—and he is the only competitor who has—to treat us to a pair of towers: a pretty sure way of obtaining a telling effect in a building mass, and of stamping it with distinction. This almost sets one wishing, though it may be heresy to say so, that such an idea might have been carried out in the case of the Westminster Cathedral itself. With two towers you get twice the emphasis, and something more. The play of light alone from one to the other is a charm to count on. . . . To sum up, I cannot help wondering a little with what feelings would some of the pious founders of our prizes and studentships have viewed the exhibition, and in what way would they have given expression to their feelings? Apart from questions of architectural style, would they have been content to observe a large pro-

portion of the designers starting, with some preconceived idea and a stock of architectural trimmings to dispose of, to evolve designs, apparently without intelligently grasping anything like the full significance of the problem to be solved, as set forth by the conditions; going the wrong way to their work from the first, and often gratuitously creating difficulties for themselves, perhaps for the purpose of getting over them—but then failing to do this, as Mr. Hare suggested was the case last year also? Or would the founders have been any better pleased in looking at certain of the representations of old work, wherein some facts are distorted and others left doubtful, when they might be clearly told—evidence not only of slipshod ways of drawing old work, but, furthermore, of a superficial way of regarding it? I must offer just a single instance of this want of thoroughness, because it is typical. One competitor begins to illustrate full-size, in elevation and section, a moulded sash-bar; but, so far from going through with the thing, and telling us the depth of the bar by giving its complete section, he is satisfied to give the moulded edge only, without going even so deep as the plane of the glass itself which the bar is designed to hold! This is so characteristic of much of the draughtsmanship in vogue, professing to be workmanlike. What is an architect, or a student of architecture, if he be not really workmanlike in his methods of work and study? For the root of the evil I fear we must go further back than the individual students themselves. To a quite considerable extent these are yet untaught and untrained in right methods of study; how to learn they have never been taught. In other callings the cry goes up for efficiency; is this any less needed in ours? But an architect of whom it could only be said that he was efficient would not thereby necessarily be entitled, in the fullest and highest sense, to recognition as an architect. For this he must add to his indispensable practical qualifications something that we try to describe by some such term as artistic ability, but for which term I would prefer to substitute another, viz., the appellation of that rather indefinable quality which, in parallel branches of human knowledge and human endeavour, is generally understood by the word scholarship; a quality based on sound knowledge, yet compounded also with something more than mere knowledge; the crowning result of a process of training rightly applied to draw out and turn to best advantage those finer instincts with which the student may have been endowed by nature. If I might presume to suggest for the architectural student two watchwords, these would be *Scholarship* and *Efficiency*. Without the one he can be no true architect; without the other he will be a sorry architect indeed!"

The Chairman then delivered the prizes and studentships, a full list of the winners of which appeared in our issue for January 24.

Mr. J. S. Solomon, A.R.A., in proposing a vote of thanks to the Chairman for his extremely practical and delightful address, said it gave him great pleasure to do so, for he held that no man was worth his salt who did not regard it as his duty to hand on some of the traditions he had received from his masters, and even to add to that some of his own experience. He wished to say, but in no academic sense, a word or two about the relation between the arts. He would not give expression to his view in that room did he not consider that it was pregnant with great possibilities for the art of this country, more particularly to the decorative forms of art, which were so very much neglected. And he held a sort of brief for the painter-students of the future. The architectural students had it in their power to show—he was going to say "their brotherly love," but he could not say that, because architecture was the mother of the arts, and painting and sculpture are the daughters. The first duty of a mother was to provide house-room for her daughters, and, if possible, to foster their development. This country did very little for certain forms of art. Some forms flourished exceedingly, and others led a torpid existence and did not flourish for want of assistance and opportunity. The Church no longer sought the co-operation of the painter practically, and a country like ours, richer in the history of great movements than any other modern nation, ought to deem it a necessity to have her great past and her moving present recorded artistically on the walls of her great public buildings. He need not point out there how materially architects could assist to bring about such a desirable result. No doubt they would see, as practical men, many difficulties—and would imagine many others. It might be said—and he had heard it said apropos of this point—that if the men existed who could do work of this kind there would be a demand, but he maintained that that was bad economics. In art, as in commerce, the demand creates a supply and the opportunity would always find out the men. He hoped architects, if they had the opportunity, would impress others with the duty they owe to this art. Mr. Webb was one who took off his coat to his work when the interest of the student was in question, and he worked hard at the Academy amongst the students. In conversations with Mr. Webb whatever topic was started they invariably ended up with the question of the art student, and they had seen that evening how great was Mr. Webb's interest in the student.

Mr. John Belcher, A.R.A., in seconding the vote of thanks to Mr. Webb for his admirable address, said it was of interest to all—young and old alike, and they would all take to heart the many valuable hints which the Chairman had given them. They were also indebted to Mr. Millard for his careful and able remarks on the students' work. There was a great deal of excellent work in the Exhibition this year, and he thought they might congratulate themselves on a very excellent Exhibition; perhaps the weakest part was the sketches. Both the President and Mr. Millard had alluded to the importance and value of sketching, and he (the speaker) agreed with Mr. Millard that we should endeavour to examine and sketch buildings as far as possible in toto, instead of sketching bits. As the President said, we sketch doors and windows and little bits of the building, and probably neglect the more important matter of the whole building. It was very important that we should study the building as a whole and sketch the whole, for in that way we got a rhythm and harmony of parts and the value of proportion: the pretty bits could be sketched afterwards, when their value in the whole would be learnt, because we should have studied their position in relation to the whole—their position as pieces of ornament, for instance, in a large field on a plain surface. If we understood the importance of the relation of one part to the other we should be careful, in selecting our tit-bits, to note how far they were supported by the surroundings.

The vote of thanks having been heartily agreed to,

The Chairman, in reply, said they had all been interested in Mr. Solomon's remarks. Perhaps architects did not give the painter "a look in" quite as often as they should. He had heard it said by painters that architects plaster their walls and panel them up so that there was no room for a picture of any sort.

The Chairman announced that the next meeting will be held on Monday, February 16, when Mr. Basil Champneys will read a paper on "College Planning."

The meeting then terminated.

THE ARCHITECTURAL ASSOCIATION DISCUSSION SECTION:

POOR LAW BUILDINGS.

The seventh meeting of the Discussion Section of the Architectural Association was held on Wednesday evening last week in the lecture room at 56, Great Marlborough-street, W., when Mr. T. Norman Dinwiddy, A.R.I.B.A., paper on "Poor Law Buildings," Mr. G. H. Smith, Chairman, presiding.

Mr. Dinwiddy divided his paper, which was illustrated by a number of plans and elevations of such buildings recently erected, into the following headings:—Administration of the Poor Law; Classification of Buildings; Workhouses for all Classes; Infirmaries; Barrack Schools *v.* Cottage Homes and Children's Homes. He said that the provision of the accommodation necessary for the administration of the Poor Laws in a Union might be classified under the following headings:—(1) Workhouse, for the "indoor poor," of three main classes: able-bodied, aged, and infirm; and also including provision for vagrants, babies, and imbeciles and lunatics before being handed over to the County Asylum Authorities; (2) infirmary for sick poor; (3) schools and homes for pauper children; (4) local offices for the distribution of "out relief"; and (5) Union offices with Board-room, &c. Having mentioned the importance of the site, the author said that in general arrangement of plan it is found most convenient to group the various departments round the administrative building on the pavilion system, due regard being paid to classification of the different sexes and classes of inmates and to the sufficiency of air space around buildings. A convenient method was to divide the sexes by a central line from front to rear of the site, placing the departments for males on the one hand and for females on the other, with the buildings common to both sexes—adminstrative block, laundry, chapel, &c.—down the centre line. It was desirable that there should be but one entrance to the institution, where there should be a porter's lodge. On either side of the entrance was the most natural position for the receiving wards, where arrivals were temporarily housed pending medical inspection. There should be at least two dormitories to each sex for the purpose of classification, and bathrooms, and search-room for each sex were required. An apartment for disinfecting the clothing of new arrivals should be conveniently placed within reach of the receiving wards, and stores for the inmates' own clothes had to be provided; also a storeroom for any furniture or goods belonging to an inmate who might be temporarily destitute. Provision must be made for short-period lunatics and a nursery for babies up to three or four years was also required. The administrative building should contain master's offices, stores for clothing, food, &c., officers' mess rooms, dining halls, kitchen, &c., and master's residence. Quarters for nurses and other officials (also the Union offices) might be arranged in the same building, though the Union offices would usually be more conveniently planned as a separate building near the entrance or in conjunction with the receiving wards block. A doctors' consultation room was required with a small surgery adjoining, fitted with sink and cupboards; the services of a local practitioner being usually retained, the provision of a doctor's residence was unnecessary. On the female side of the administration block should be a linen sewing-room, where certain of the female inmates were employed in the making of shirts, &c. The matron's office was conveniently placed next the linen room. As to the dining halls, they should have sufficient area to allow about 1 ft. 9 in. by 2 ft. 8 in. (deep) of floor space to each person, with proper gangways in addition. They should be entirely separate for the able-bodied and aged classes and so placed as to be easily approached from the pavilions of each class and sex and without the crossing of traffic. Each should be divided for the sexes, moveable partitions about 7 ft. to 8 ft. high being sufficient. Glazed brick walls, with salt-glazed dado, though of additional initial cost, formed a sanitary and everlasting wall surface. Wood-block flooring was suitable, and open roofing with central glazed lantern gave the necessary height, lighting, and ventilation. The author described in detail the various departments of the administrative block, adding that the departments should be connected on the ground floor by well-lighted corridors, about 8 ft. wide and as far as possible in straight lengths. They should be floored with hard-burnt tiles, which were sanitary and withstood wear. The master's and matron's residence was well placed at the front of the administrative block. As to the pavilions, containing the sleeping and dayroom accommodation for the inmates, each building should be independent and entirely self-contained. The accommodation of each should be limited to about 100, for hygienic reasons as well as for a better precaution against the spread of fire, for ease of control, and for classification. The regulations of the Local Government Board as to the areas of floor space to be allowed to each inmate, which largely influenced the planning of the dormitories and dayrooms were, for inmates in health, as follows:—Dormitories, 9 ft. by 4 ft. wall space and 360 ft. cube; and dayrooms 15 ft. super. For the infirm, dormitories, 10 ft. by 5 ft. and 500 ft. cube. The pavilions could be conveniently arranged on three floors, those for healthy inmates, containing the dormitories on the two upper floors, with dayrooms on the ground floor, the dormitories being 18 ft. wide, and a multiple of 4 ft. in length to allow of two rows of beds with the requisite head space and super.

About twenty should be considered the limit to be provided for in one dormitory, and the provision of some, at least, of smaller capacity greatly aided classification. The doors, as well as the fireplaces, should be at the ends of the dormitory, to avoid trespass on the available head space for beds. It is important, for efficient ventilation and lighting, that the windows should be on opposite walls; inlet and outlet ventilation should also be provided, the extractors from the top floors being by roof ventilators connected by air shafts with ceiling gratings, and to the remaining floors by brick flues. The baths should be planned in a cross-ventilated annexe, with isolating lobby, and a slop sink, and an emergency water-closet were required on each floor. A small attendant's bedroom should be provided in a central position, with overlooking windows into one or more of the dormitories. The dayrooms should be of varying sizes to assist classification of the inmates, about forty being the limit in any one room. The lavatory might be planned in the annexe below the baths, and a small scullery, with cooking range and sink, was serviceable; a room must be provided for the attendant. The latrines were best placed externally in the airing yards away from the main building, except in the case of the pavilions for the aged inmates, where they might be placed on the ground floor of the sanitary annexe. The pavilions for the aged infirm much resemble the pavilions of a hospital, and but little dayroom accommodation was required, as most of the inmates' time was spent in the dormitories or wards, which, in order to provide the 50 ft. of floor space per inmate required, should be 20 ft. in width, and might occupy the ground as well as the upper floors. A small dayroom and external airing balconies might well be provided on each floor. To comply with the requirements of the Local Government Board, external fire escape staircases, with balconies, must be provided from all the main rooms of the upper floors of all the pavilions, though it was hard to believe that with fire-resisting internal staircases and landings this safeguard against fire risk was a necessity. A salt-glazed brick dado, with fair-faced and coloured brickwork above, formed a suitable wall surface for the pavilions, but in the pavilions for the aged and the infirm perhaps plastered walls might not be an undue expense. In the dormitories where the floors were not subjected to especially heavy wear, ordinary wood flooring should suffice, but that to the ground-floor rooms should be wood block, and the corridors, lavatories, &c., paved with hard tiles or other suitable material. The provision of separate quarters for aged married couples is advised by the Local Government Board. In practice the number who avail themselves of this accommodation is few; the building might be somewhat more comfortable in finish than the general pavilions, separate bedrooms being provided with a common dayroom, small scullery, &c. Communication between the pavilions and the administrative block, both for staff and access of inmates to the dining-halls, &c., was by covered corridors, paved with tiles or other durable material. Sufficient protection was obtained from the weather without enclosing the sides of the corridors, except, perhaps, in the case of those to the pavilions for infirm.

The author then described the laundry block (including the bakery, the boiler-house and engine-room, and plant), the chapel, isolation block, workshops, mortuary, water supply and heating, and vagrant wards. The workshops, he said, should be placed within reach of the able-bodied males' pavilions, and consist of establishment and labour shops—the former for the general work of the institution, in which some of the inmates assist, and the latter, in which the able-bodied inmates perform their allotted task. A stone-breaking yard might also be provided, with cells covered with lean-to roofing. A small office was necessary for the labour-master, planned where supervision was most easily obtained; and latrines should be provided in the workshops yard. Smaller workshops were also required near the aged males' quarters, for such of the aged inmates as were able to work. A small provision of stabling should be made on the site. The vagrant wards should be near the entrance, and perhaps in this case, especially where the number of vagrants was large, the advantages of a separate entrance outweighed the disadvantages. The separate cell system, with work cell attached, was undoubtedly the most convenient. There should also be a dayroom for assembly at meal-times, &c., and attendants' rooms and latrines. Like provision should be made for the women as for the men.

In the opinion of the author, with the largely increased building cost of the present time, and having regard to the completeness of the accommodation required to meet modern views, these institutions could hardly be erected for less than 200*l.* per bed, excluding cost of site, electric lighting, well, and furnishing.

The author concluded his paper with a brief account of the house and school accommodation for the pauper children provided for under the poor laws. Originally the children were provided for in the workhouses, but later, and up to quite recent years, they have been usually accommodated in "barrack-schools." Six years ago, a Departmental Committee reported in favour of the cottage home system as giving more freedom, better health, the possibility of individual care, and a better prospect of the elimination of the pauper taint. There were two systems of cottage homes—*i.e.*, the "grouped" and "scattered." The latter consisted of scattered cottages, actually in towns and villages, where the children go to the nearest school and live the common life of the ordinary inhabitants, but there were practical difficulties in this system, chiefly in obtaining sufficient suitable "foster mothers." Thus, where considerable numbers had to be provided for, it had generally been found expedient to adopt the "grouped" principle, which gave disciplinary training and still permitted the children to attend the Board schools in the district. The author then described in some detail the "grouped" system, in which should be provided, in addition to the administrative block and the homes (which could contain from ten to twenty children and the housemother), a gymnasium and swimming-bath, laundry, small isolation infirmary, and workshops. Each of the cottages must be entirely self-contained.

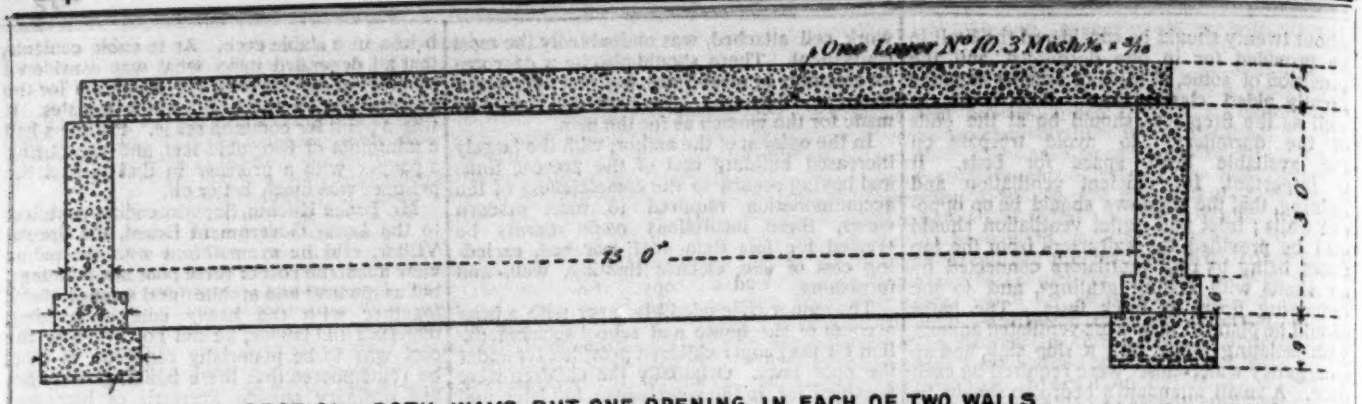
In the discussion which followed, Mr. Jacob, in proposing a vote of thanks to Mr. Dinwiddy, said that too much sentiment was wasted on adult paupers. Workhouse masters had stated that but for drink workhouses would be either unnecessary or very much less used. He thought that the Local Government Board insisted on too much air space for these buildings, and altogether it seemed to be a fact that the man who wasted his life in excessive drinking was far better provided for than the industrious poor. As to the provision for children, there were a number of ratepayers who could not afford to provide properly for their own children, while they had to provide for poor-law children. But he agreed that it was a good thing to get children away from workhouses, so as to remove the pauper feeling. He did not think that boxes were necessary in swimming-baths for children: a seat all round the bath was sufficient for children, especially as they ought always to be under observation. Nor did he think that workshops in these schools were necessary, seeing that the Guardians had no power to keep the children, who might be removed by their parents at any time.

Mr. J. Herbert Pearson seconded the vote of thanks, and asked what was the most sanitary form of latrine.

Mr. Bonds said it was a difficult problem to solve whether these institutions were necessary or not.

Mr. H. Gregory Collins, hon. Secretary, said that if vans, &c., had to wait at the entrances of these buildings it would be well to have covered entrances. What was the percentage of the accommodation required in a reception block? As to a chapel in connexion with such buildings, in prisons the chapel was generally arranged on the first floor over the central administrative block. That seemed to be a good position for the chapel in these Poor Law buildings. As to exits, he thought it was a good plan to have exits at the sides of the pavilions, as well as at the end. As to glazed bricks, he strongly objected to them for use in such buildings. They caused condensation, and the walls were always "sweating." Plain brick walls for workhouses were much better, for they permitted a "blow through" and the equalisation of temperature. The glare of the shining surface of glazed bricks was also bad, and if glazed bricks must be used, they should be used with a dull face. He would not use shiny surfaced bricks in a stable even. As to cubic contents, that all depended upon what was considered by medical experts to be the minimum for the preservation of the health of the inmates. It was a point for common sense. Prisoners had a minimum of 800 cubic feet, and contrasting a pauper with a prisoner in that respect, the prisoner was much better off.

Mr. Brook Kitchin, Superintending Architect to the Local Government Board, the Special Visitor, said he sympathised with the public view about the cost of these poor law buildings, but as medical and architectural science stood, together with the heavy cost of building materials and labour, he did not see how the cost was to be materially reduced. It must be remembered that these buildings were not like ordinary outside hospitals or barracks; they were homes where people were all day, and where they frequently spent the whole of their lives. The amount of cubic space they had was 360 ft., and it was absolutely necessary that they should have a proper amount to keep them in health. The Local Government Board were very particular in regard to the cost of these institutions, but as they had a duty to perform in the proper housing of the destitute poor, they desired to house them in a proper way. The board were strongly of opinion that any lavish expenditure on workhouses was entirely unjustifiable, and they had done much in recent years to check expenditure. It was a great difficulty to get some Boards of Guardians to be reasonable, for there was often much rivalry between them. A chapel was not a necessary adjunct in a workhouse. In small workhouses a chapel would not often be found at all, unless it were provided by some philanthropic person, services being conducted in the dining-hall. There was no reason why the chapel should not be used by different creeds. The altar difficulty could be got over by having an altar at each end of the chapel, or having them side by side. The number of architects engaged in this work was small, but the subject should not be neglected, for a work of this kind might fall to anyone at any moment. He did not know that any architect had made an undying name in the design of these buildings. There was Sir Gilbert Scott, into whose hands fell the work of a great number of these buildings, *i.e.*, Lichfield, Edmonton, Staines, Macclesfield, Epsom, &c., but most of Scott's work had been removed to make way for modern buildings. The architectural side of these poor law buildings was not always a pleasant one, for there were many obstacles to be overcome, especially the difficulties with the Guardians. For instance, plans might be prepared by an architect and soon after a fresh Board of Guardians might be elected, who might reverse the building policy of the former Board. In those circumstances, unless the architect had his contract under seal, he might find himself in difficulties with the new Guardians. The Local Government Board did not always have good architects to deal with; often the architects were not architects, sometimes they were clerks of works and even workhouse masters, who had done a little amateur architecture, and it was sometimes very difficult to settle things. He should like to impress on architects that economy must be studied in the design of these poor-law buildings—the economy not only of cost but of actual planning, for economical administration depended on that to a great extent. Architects often failed in this respect. He did not altogether agree with Mr. Dinwiddy as to the cost per bed of these buildings. They should not as a rule cost 200*l.* per bed, though London workhouses came up to and exceeded that amount in some cases. One of the first workhouses erected was at Taunton in 1836, and the cost at that time was from 12*l.* 10*s.* to 24*l.* per bed, but it must not be forgotten that ideas had changed much since then. In 1838 the Newcastle workhouse was erected at 18*l.* per bed and others cost much about the same. A modern workhouse, such as the one just completed at Wolverhampton, for 1,230 inmates, cost about 146*l.* per bed, and that building was typical of a complete provincial workhouse, and it included infirmary and imbecile wards. Imbecile wards were not now included in workhouse buildings, and it was to be hoped that the subject would come before Parliament and that imbeciles would not in the future be housed in workhouses. Several other workhouse buildings had just been erected for about



SECTION BOTH WAYS BUT ONE OPENING IN EACH OF TWO WALLS.

148*l.* per bed, but if infirmaries, distinct from the workhouse, were added, the cost was somewhat higher. A doctor's residence was not wanted at a workhouse where there was no infirmary, nor was there any need for a regular nursing staff. As to the isolation of baths in projection, he did not consider that necessary and it was not a Local Government requirement. Having regard to the excellent plumbing we get nowadays, there was no reason why baths should not be placed inside these buildings, a much less expensive arrangement. What Mr. Dinwiddy said as to fire escapes was going a little beyond what the Local Government Board required. They required secondary means of exit from all the wards, but that did not necessarily imply that every ward must have a separate staircase. With a series of wards, connexion with a staircase at one end would suffice. He did not think that too much importance could be placed upon the necessity of ample means of exit. Fire was not the greatest danger; there was the smoke. A disastrous fire at Stafford workhouse resulted in loss of life because the means of exit were not up to date, and when the fire broke out in some central part of the main building the staircases were quickly blocked with smoke, and exit was very difficult. It was often very difficult to awaken and get old people out of burning buildings, or sometimes to realise the danger there was. Mortuaries were not usually provided at a workhouse, and the people generally died in an infirmary. Where they were provided, the slab arrangement was a nice one, but there was, he thought, a better, *i.e.*, what was known as the cabinet arrangement; that was more suitable, especially where land was very valuable, and the saving of space an important object. It consisted of two or three tiers of drawers, concealed behind a screen which had a passage round the back of it, so as to clean the back out. The drawers worked on light trollies, and when a particular body was wanted the drawer was pulled out, and in that way the other bodies were not exposed; such an arrangement as this would obviate the need of a separate viewing room.

The Chairman then put the vote of thanks to the meeting, and also proposed a hearty vote of thanks to the Special Visitor. This having been agreed to,

Mr. Dinwiddy, in reply, said he thought it was important that children in these buildings should be taught some trade, and that was why he recommended workshops for them. Most of the children were left entirely under the control of the Guardians. As to school, it was a regulation of the Education Department that all the children in these buildings should attend school, which they did, in the ordinary way. As to latrines, there was the old-fashioned trough closet, but a better closet was the separate pedestal closet. There was no need why vans should be kept at the entrance of these buildings, and consequently there was no need for covered entrances. In the reception block it was generally found that about five or six per cent. of the workhouse population were accommodated there. [Mr. Brook Kitchin: That is too high.] The chapel was sometimes put on the first floor, and that was, perhaps, a convenient place. As to two chapels, in a garrison chapel he knew of, services for three and more different sects were held in the same building. As to exits, he meant that there should be only one exit from the main site. In the pavilions, it was desirable to have two or three exits. Glazed bricks were very sanitary, although more costly. The cost of these buildings varied a good deal, and in stating that the Greenwich building cost 215*l.* a bed, Mr. Dinwiddy gave examples of others costing 220*l.* and 240*l.*

ARCHÆOLOGICAL SOCIETIES.

THE ROYAL SOCIETY OF ANTIQUARIES OF IRELAND.—The annual general meeting of the Royal Society of Antiquaries of Ireland was held on the 27th ult. at the rooms of the Society in St. Stephen's Green. Mr. J. Ribton Garstin was elected President for the next three years. Several new members were enrolled. The report of the Council for the year 1902 was submitted and adopted. This report states that the Society is in a satisfactory financial condition. It refers also to the valuable provision inserted in the Local Government (Ireland) Act, 1898, which enables Irish County Councils to take charge of any monument not already vested. The County Council of Galway is entitled to the credit of being the first to make this section operative, and under its provisions the High Cross of Tuam and the ruined Church Temple Jarlath have been judiciously repaired. The report then deals with the excavations in Tara Hill. The Watching Committee appointed by the Council of the Society state that when attention was called in Parliament in 1899 to the fact that deep trenches were being dug through the "Rath of Synods" on a portion of the hill belonging to Mr. G. V. Briscoe, the Board of Works intervened, but, finding that the place was not vested in them, withdrew from any further interference. On Lord Russell's portion of the hill, where the more important of the existing structures are to be found, there has been no visible alteration in their contour since Petrie's time. The digging-up of the mound known as the "Rath of Synods" has ceased since June last. It was announced that the summer excursion for 1903 is to be held in the Province of Munster, with Youghal as the chief centre. The excursion will take place in the last week of July or the first week of August.—At a public meeting in the evening, Mr. J. Ribton Garstin, D.L., the new President, delivered his inaugural address, in the course of which he dealt with the subject of Irish coins. He traced the history of Irish coinage down to 1822, when the last Irish gold coins were issued. He described how Ireland had figured in the coinage since the Union in respect of national emblems as distinct from national inscriptions. He traced the several variations in the inscriptions, and towards the close of the address made a passing reference to the question of the gold ornaments now in the British Museum, the custody of which was claimed by the National Museum in Dublin. The Council in their report did not deal with this matter. He would follow the example of the Council, as the whole question was now *sub judice*. The case was entered for hearing in the Chancery Division in London, and would probably be heard within the next month. The Society of Antiquaries in London had taken sides with the Trustees of the British Museum in the matter. He deprecated their intervention. He said he wished to remind the Trustees of the Dublin Museum that the great institution under their charge ought to be treated as a national collection primarily, and not merely as an institution to subserve technical instruction and furnish patterns for artisans.

A TEST ON CONCRETE AND EXPANDED STEEL.

A SPECIAL test was made a few days ago, at Messrs. Connal's pig-iron stores at Glasgow, on a slab of concrete as shown on the accompanying sectional diagram, reinforced with a tension bond of expanded steel about ¾ in. from its lower surface. The slab, which was completed about three months ago, was supported by dwarf walls 3 ft. high, and had a bearing on these walls of 6 in. on all four sides. The tests made this week showed that the breaking load was 56 tons 11 cwts. Under this weight the slab gave way, the fracture radiating from the centre outward towards each angle.

We consider, however, that the test was only partially satisfactory; a load of 5 cwts. per square foot is not excessive, and for a slab supported on four sides a better result might have been anticipated. To count on supports for only two sides is a more usual condition in practice, and this would have been the more instructive test. If, further, a similar slab without expanded metal had been tried at the same time the precise value of the reinforcement would have been ascertained. It should be said the expanded metal was in two sheets, 16 ft. by 8 ft., overlapping one mesh, and simply laid on the boarding. The concrete as thrown on it lifts the sheet sufficiently to ensure of its being quite embedded. After the rupture it was noticeable that one of the edges showed a deflection of 1½ in.; how much more to the centre of the slab could not be seen for the mass of pig-iron.

The concrete is described on the test diagram as being "of about 2½ parts of ¾-in. mesh clean clinker, broken brick, or stones" (it is not precisely stated which), "1½ parts clean sharp sand, and 1 part best Portland cement." The tie was of the Expanded Metal Co.'s material.

ARCHITECTURAL SOCIETIES.

NORTHERN ARCHITECTURAL ASSOCIATION.—A meeting of the Northern Architectural Association took place at the headquarters, 36, Northumberland-street, Newcastle, on the 28th ult. Mr. Frank Caws, of Sunderland, presided. The result of the competitions in measure drawings and sketchings was made known. The first and second in each class were Mr. F. M. Weightman and Mr. T. Harrison. Third places were taken by Mr. H. L. Hicks and Mr. C. T. Greenhow. Mr. Ralph Hedley, R.B.A., gave an address on the subject of "Sketching in Charcoal." He said the remarks he was about to make on sketching and designing in charcoal were principally addressed to the students. He did not pretend to tell them anything new. Charcoal had been appreciated by artists for ages, but he did not think it had been quite sufficiently appreciated by architects. The reason why he advocated charcoal so much for drawing details of whatever kind of decoration was required was because it lends itself so readily to what one desires to express. Delicate, soft, or sharp lines; broad and delicate tints; broad and decided shadows, could be produced with charcoal with much more ease than with pen or pencil. With charcoal they could give all relative planes, of any required depth or strength, quality, and feeling. That was of the utmost importance, and would enable details to be understood at once—that was, projections and sinkings—if great care was taken to imagine a light coming from either the right or the left. In showing

relief in a design, if they got the light full on it was rather deceptive when it was handed over to be executed. It was often very difficult to know whether the designer of some piece of ornament intended parts to be concave or convex without showing a section, and it was quite impossible to show sections in delicate parts of foliage. If a little thought was displayed in drawing, it could be expressed and understood almost as well as working from a model in relief. It was extremely difficult to express with pen or pencil in full-sized drawings. By the pressure required and the trouble involved in drawing a great number of thin lines all freedom was lost, and with freedom, certainly individuality must be lost, and he thought every drawing of decoration should have individuality. The easiest way of getting individuality was by working with something that expressed their thoughts, and they could not help themselves if they used charcoal freely. Their own feeling was bound to crop up. He would show them as well as he was able what he thought was the best manner, and how to get at a workable drawing, say, of a caryatid. Mr. Hedley then made sketches from a living model, with explanations, and at the conclusion of his demonstration he was accorded a hearty vote of thanks.

THE EDINBURGH ARCHITECTURAL ASSOCIATION.—The Associate Section held their fourth ordinary meeting of the session in the rooms, 117, George-street, on the 28th ult. In the absence of the Chairman, Mr. J. A. Arnott, Vice-Chairman, occupied the chair. Mr. J. A. T. Houston, representative from the Glasgow Architectural Association, read a paper entitled "Some Cambridge Colleges." Mr. Houston treated his subject almost entirely from an historical standpoint, and began by tracing the origin of the town of Cambridge back to the time when a Roman station named Camboritum stood on the banks of the river Cam, on the site of the present town. The lecturer sketched the establishment of religious orders in Cambridge about 1224, and explained fully the principles of the original Universities founded after that date. King's College, which owes its origin and maintenance to the Kings of England, beginning with Edward II., received special attention from the lecturer; the many schemes for its erection and completion being fully considered, including the great scheme of Henry VI., the only portion of this scheme carried out being the magnificent chapel of King's. Interesting notes were given of the origin and history of Trinity College, Queen's, and many of the more important colleges. The lecture was illustrated by limelight pictures.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.—The third craft evening in connexion with the above Society was held on Thursday, January 29, the President, Mr. Butler Wilson, in the chair. The demonstrator for the evening was Mr. Walter Gilbert, of the Bromsgrove Guild, who discoursed upon "Decorative Metal Work," and exhibited and explained the processes connected with various examples of the art produced by his band of fellow-workers. Previous to this he delivered a short but interesting paper, in which he traced the history of the ancient guilds from their inception, and dwelt upon the fact that in the days gone by everything manufactured seemed unavoidably touched by the finger of art. He contended that the misleading phrase "Gothic work" should give place to some such term as "Guild work." The craftsman in former times made his work as amusing to himself as he could, and lavished treasures of human hope and thought on everything that man makes, from a cathedral to a porridge-pot.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held on Tuesday in the County Hall, Spring-gardens, Sir J. McDougall, Chairman, presiding.

Loans.—On the recommendation of the Finance Committee, it was agreed to lend Poplar Borough Council 2,450*l.* for sewerage works, and 4,217*l.* for street improvement, &c.; Wandsworth Borough Council, 1,210*l.*, for laying out Leader's-gardens, Putney, as an open space; Battersea Borough Council, 2,851*l.*, for channelling and kerbing works; and Hampstead Borough Council, 2,950*l.*, for hardwood paving works; and sanction to the following loan: Islington Borough Council, 5,310*l.*, for sewer works.

Acquisition of Gardens, Stepney.—An adjourned Report of the Parks and Open Spaces Committee recommending the acquisition of gardens in Stepney gave rise to a prolonged discussion. The Committee's recommendation that the estimate of 10,300*l.* be approved for the purchase of Ford and Sidney squares, Stepney, was agreed to.

Houses Let in Lodgings.—The Public Health Committee recommended that the Report of the Medical Officer on the enforcement of by-laws with regard to houses let in lodgings in London be published and placed on sale at the price of 2d. per copy. They reported that the total number of tenements of less than five rooms in London is 672,030, but only 16,433 houses let in lodgings are registered under the by-laws. In six districts, although thousands of tenements of less than five rooms are in existence, the number of houses registered under the by-laws does not amount to 100, while in five others the number does not reach 200. The Committee regarded this as very unsatisfactory, and to amount practically to an evasion of the duties imposed by the statute.

It was decided to draw the attention of the Borough Councils to the subject, and to place on sale the report of the medical officer.

Sewage and Oysters.—The Public Health Committee submitted a lengthy Report relative to sewage-contaminated shell-fish, which contained the following recommendation:—"That a letter be addressed to the Local Government Board expressing the Council's hope that, in the interests of the public health, the Board will, as soon as possible, take steps to obtain an amendment of the law, so as to prohibit under heavy penalties the laying down of all edible forms of shell-fish in sewage polluted creeks or other dangerous localities, and the sale of such shell-fish for human consumption; and that all unpolluted layings, fattening beds, and storage ponds at present in use may be protected from pollution by sewage by any person or Sanitary Authority."

Mr. Sankey said he thought the report was a valuable one, as showing that the fear as to shell-fish being a source of danger was not without serious grounds. He did not say that the London County Council was responsible for polluting the Thames estuary, although it might be that they were doing some damage by the effluent which they discharged into the river at Crossness. Probably the greatest offenders were local authorities such as Leigh, Southend, Chatham, Rochester, Sheerness, and other places on the Medway. He proposed as an amendment:—"That the Report be referred back, with a view of conferring with the Main Drainage Committee and the chemist of the Council."

Dr. Longstaff, in seconding the amendment, remarked that not only the oyster and humble cockle, but the smelt, sprat, and whitebait were all liable to convey the dread disease of enteric fever. That was a serious matter for people who lived by these fisheries.

Dr. Cooper (Chairman of the Committee) remarked that he had consulted with the Chairman of the Main Drainage Committee, who agreed with him (Dr. Cooper) in thinking that no good could come from such a conference as was suggested.

The recommendation was adopted.

Duties of Sanitary Inspectors.—The same Committee reported as follows:—

"We have received from the Local Government Board a letter stating that they have under consideration a proposal from the Wandsworth Borough Council to reappoint five sanitary inspectors for the supervision of drainage works. A part of the time of these officers is occupied in the supervision of the construction of new drains made under the provisions of the Metropolis Management Acts, and part in the supervision of drainage works which have been carried out in order to comply with notices served under the direction of the medical officer of health in pursuance of the provisions of the Public Health (London) Act, 1891. The Board state that they are advised that, from the point of view of uniform sanitary administration, the Borough Council's proposal is one to be commended, but that they would be glad to learn whether the London County Council has any objection to offer to the proposal. The duties of sanitary inspectors are regulated by a general order of the Local Government Board made under Section 108 of the Public Health (London) Act, 1891, and the Council is required to pay one-half of the salaries of sanitary inspectors performing duties defined by the Order. The proposal of the Borough Council is, no doubt, intended to bring the officers referred to within the provisions of the Act, and make a moiety of their salaries payable by the London County Council.

The Solicitor is of opinion that the supervision of the original construction of drainage works, which is carried out under the Metropolis Management Acts, does not come within the scope of a sanitary inspector's duty as set out in the Order, and that the Council would not be liable to pay a moiety of the salary of a sanitary inspector performing this duty.

We have made inquiries as to the practice in other districts with regard to the supervision of the construction of the drainage of new houses, and we find that in sixteen districts sanitary inspectors are not employed on this duty. In nine districts the work of supervision is done by sanitary inspectors who are under the direction of the Medical Officer of Health, while in two instances the inspectors are under the direction of the Borough Surveyor. . . .

We recommend that the Local Government Board be informed that the Council is advised that the supervision of the original construction of drainage works which is carried out under the Metropolis Management Acts is not one of the duties of a sanitary inspector prescribed by the Sanitary Officers (London) Order, 1891, and that the Council therefore hopes that the Board will not sanction the proposal of the Wandsworth Borough Council to re-appoint five inspectors so long as they are engaged upon this duty."

The recommendation was carried after a brief discussion.

Theatres, &c.—The Theatres and Music Halls' Committee recommended as follows:—

Seating arrangements in the stalls and pit, &c. Criterion Theatre (Mr. F. T. Verity, for Sir Charles Wyndham).

A church room, Holy Trinity Church, Little Queen-street (Messrs. Hayward & Maynard).

Streets and Street Traffic.—The Building Act Committee reported as follows:—

"The Council on February 19, 1901, referred to us for consideration and report the following resolutions which were passed at the conference between the Council, the City Corporation, and the Vestries, and District Boards, as to streets and street traffic—

16. That, in the opinion of the Conference (1) the best means of showing the names of streets on buildings is by means of painted iron name-plates at the corners and intersections of streets; (2) that the best means of showing the names on lamp-posts is by means of opal tablets in the public lamps, the letters being burnt in the glass itself; (3) that the names should be attached to the lamps or lamp-posts in such a manner as to be visible both by night and by day; (4) that the names of thoroughfares should be placed at all intersections of cross streets.

17. That the Building Act Committee of the Council be requested to consider the desirability of more stringent regulations being passed for the prevention of the wilful injury of street tablets.

18. That, in the opinion of the Conference, licences for hoardings should be granted for a limited period only, subject to renewal at the discretion of the Local Authority, and that, if necessary, statutory provision should be made.

27. That the Council be asked to consider the question of making regulations with regard to shop sunblinds.

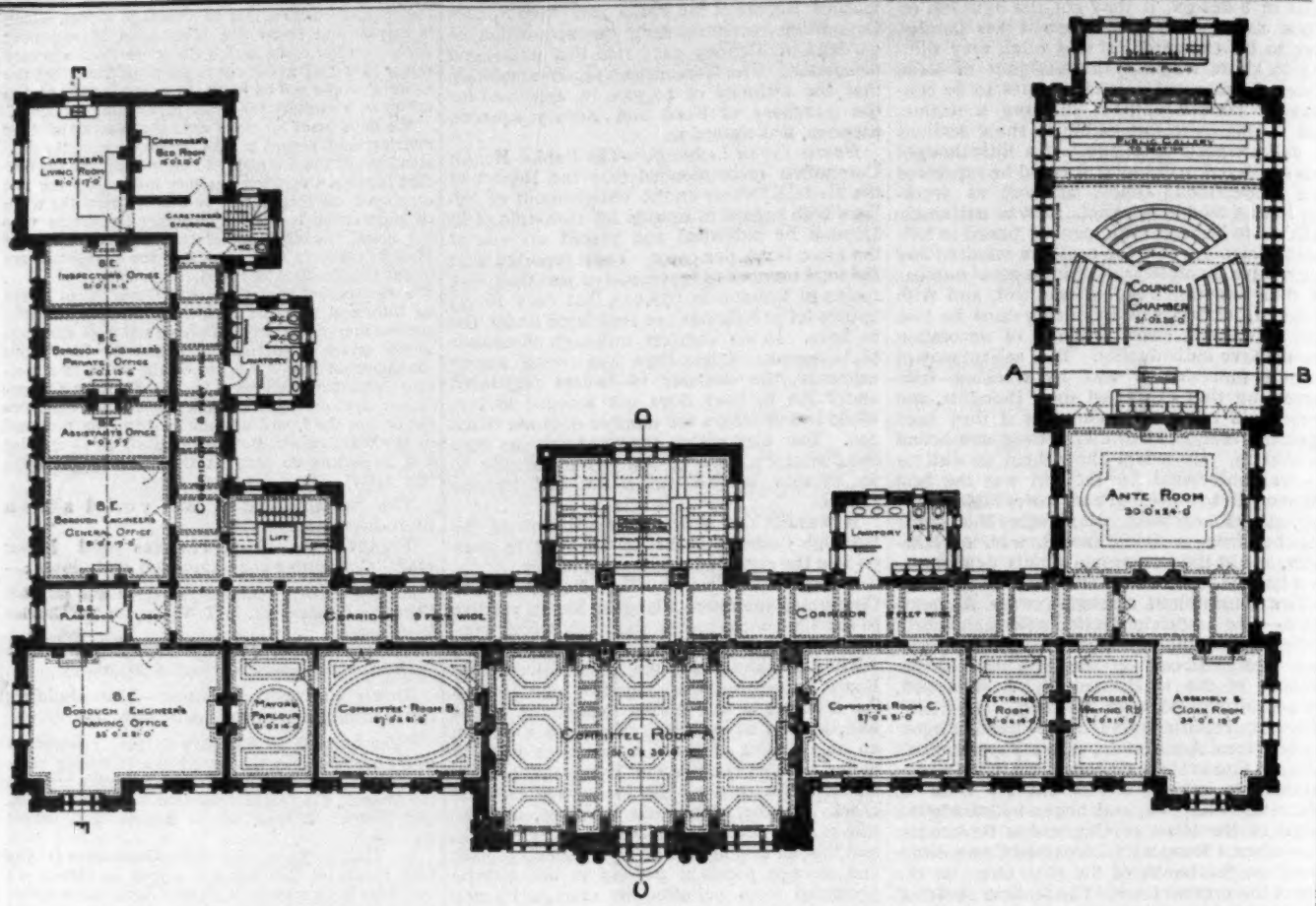
28. That, in the opinion of the Conference, power should be given to enable Local Authorities to compel owners of unoccupied land to provide proper fencing, and that the question of retaining walls be referred to the Council.

We have carefully considered as to what action it is desirable to take upon the resolutions in question, and we have now to report as follows:—

In regard to resolution No. 16, the duty of affixing names of streets in a conspicuous place is, by Section 33 of the London Building Act, 1894, cast upon the local authorities, who would appear to have power to discharge the duty in the manner they think best. If it be desired that a uniform method should be adopted throughout the County of London, it would seem to be a matter for agreement between the different local authorities, and we cannot advise the Council to take any action in regard thereto. With reference to No. 17 we think that the Local Authorities have power to deal with offences of injury to street tablets under the Malicious Injuries to Property Act, 1861, Sections 51 and 52. We understand, however, that the Hampstead Borough Council has a proposition before the Home Office for making a by-law to deal with the matter in that Borough, and in any circumstances it would not seem that any action by the Council is required. These resolutions, Nos. 16 and 17, were also referred to the Local Government and Taxation Committee, and we understand that that Committee concur generally in the views above stated.

As regards the licensing of hoardings, it is quite possible that inconvenience may have been caused by hoardings being allowed to remain up longer than was necessary, but the local authorities appear to have ample statutory powers to license and control such structures, and we do not consider that any action by the Council is necessary.

Resolution No. 27, respecting the making of regulations in regard to shop blinds, is being given effect to, draft by-laws for the regulation of lamps, signs, and other structures overhanging the public way (not being within the City) having been pre-



FIRST FLOOR PLAN

Scale of Feet.

Competition Design for South Shields Municipal Buildings.

pared pursuant to Section 164 of the London Building Act, 1894, and submitted unofficially to the Local Government Board for its observations. With regard to Resolution No. 28, to give effect to this would necessitate an amendment of the London Building Act, 1894 (or the Local Management Acts), or the insertion of a clause in the Council's General Powers Bill. We have, therefore, noted the suggestion for consideration with the other points on which an amendment of the London Building Act, 1894, may have to be sought."

Appointment.—On the recommendation of the Establishment Committee it was agreed to appoint Mr. H. Bragg as an assistant in the Housing of the Working Classes Section of the Architect's Department.

The Council adjourned shortly after seven o'clock.

Illustrations.

COMPETITION DESIGN FOR SOUTH SHIELDS MUNICIPAL BUILDINGS.

IT may be remembered that in the first competition for the municipal buildings at South Shields seventy-two designs were sent in, and the three premiums were awarded to those submitted by Mr. Ernest Fetch, Mr. Rupert Savage, and Mr. Louis Ambler respectively.

A second competition was instituted, and the above-named and three other architects whose designs were considered next in order of merit by the assessor, Mr. John Belcher, were invited to send in further designs, on amended conditions and an increased allowance of expenditure. The result was the same as before, Mr. Fetch being again successful, and he has since been instructed to carry out the work.

The design here illustrated was that submitted by Mr. Louis Ambler in the final competition, and was a development of that which gained the third premium in the first competition.

The frontage lines of the buildings were laid down in the conditions, and the laying-out of the forecourt with balustrades, statues, and fountains was part of the architect's design, and not merely an imaginary sketch for the sake of pictorial effect.

A simple imposing erection was aimed at in the design of the building, and it was thought that the broad flights of steps up to the main entrance would add dignity to the façade, and by raising the lowest, or half-basement, floor to about the level of the street, a side entrance to the offices was obtained, at that level, near the south-west corner of the building, and close to the lift and secondary staircase giving direct access to the various offices on each floor.

The offices of each department were grouped together, and separated from each other by corridors or lobbies. Those of the town clerk, borough accountant, medical officer, and weights and measures were arranged on the ground floor, and the Borough Engineer's on the first floor. The principal staircase, in the centre, led directly up to the rooms of the Town Council, which were all planned *en suite*, on the front and side furthest removed from the noisy traffic, where the Council Chamber was placed, with a public gallery and separate staircase thereto from the street. A similar staircase was provided for the caretaker, whose rooms were required to be on the first floor, with convenient access to the mayor's parlour, &c. It was proposed to face the buildings with "Windy Nook" or "Denwick" stone, and to cover the roofs with Buttermere green slates.

The estimated cost was about 35,000*l.*, exclusive of the tower and the forecourt.

PREMISES, 16 AND 17, PRINCES-STREET, CAVENDISH-SQUARE, W.

THESE premises, on the Howard de Walden estate, have recently been rebuilt at a cost of 7,000*l.* The building comprises a shop on the ground floor, with showrooms and residential flats on the upper floors.

An effort has been made to give sufficient importance to the business portion of the premises by relying on architectural dignity for this purpose rather than on large glass surfaces, leaving the top floors apparently unsupported, as is so commonly the practice in shop architecture in London. The absence of wooden frames to the windows on the upper floors has given the full value and solidity to the stone mullions, the glass and iron casements being let directly into these, and although the greater amount of wall space is of necessity devoted to the lighting of the rooms, no effect of weakness is in consequence produced.

The interior decorations have been executed for Miss Annie Down, and include some effective panelling and marble lining.

The whole has been carried out under the supervision of the architect, Mr. Maberly Smith, by the contractors, Messrs. Davis & Leaney, of Southend-on-Sea, the carving being executed by Mr. Michael Murphy, of Battersea.

MILLBROOK CHURCH, DEVON.

THE illustration shows a south-east view of the above-named church, which was designed to take the place of the existing hideous building.

The general plan consists of a nave, north and south aisles, chancel, and vestries, advantage being taken of a fall in the site towards the east to place the vestries under the chancel, a staircase in the south side leading down to them.

The nave is 73 ft. in length by 24 ft. 6 in. wide, and is divided into four bays of 18 ft. centres. The north and south aisles are 10 ft. 6 in. wide, and are of the same length as the nave.

The chancel, which is 33 ft. in length by 23 ft. in width, is divided from the nave by a small stone traceried screen, and the chancel arch rises to nearly the whole height of the roof, the altar being raised six steps from the nave floor level.

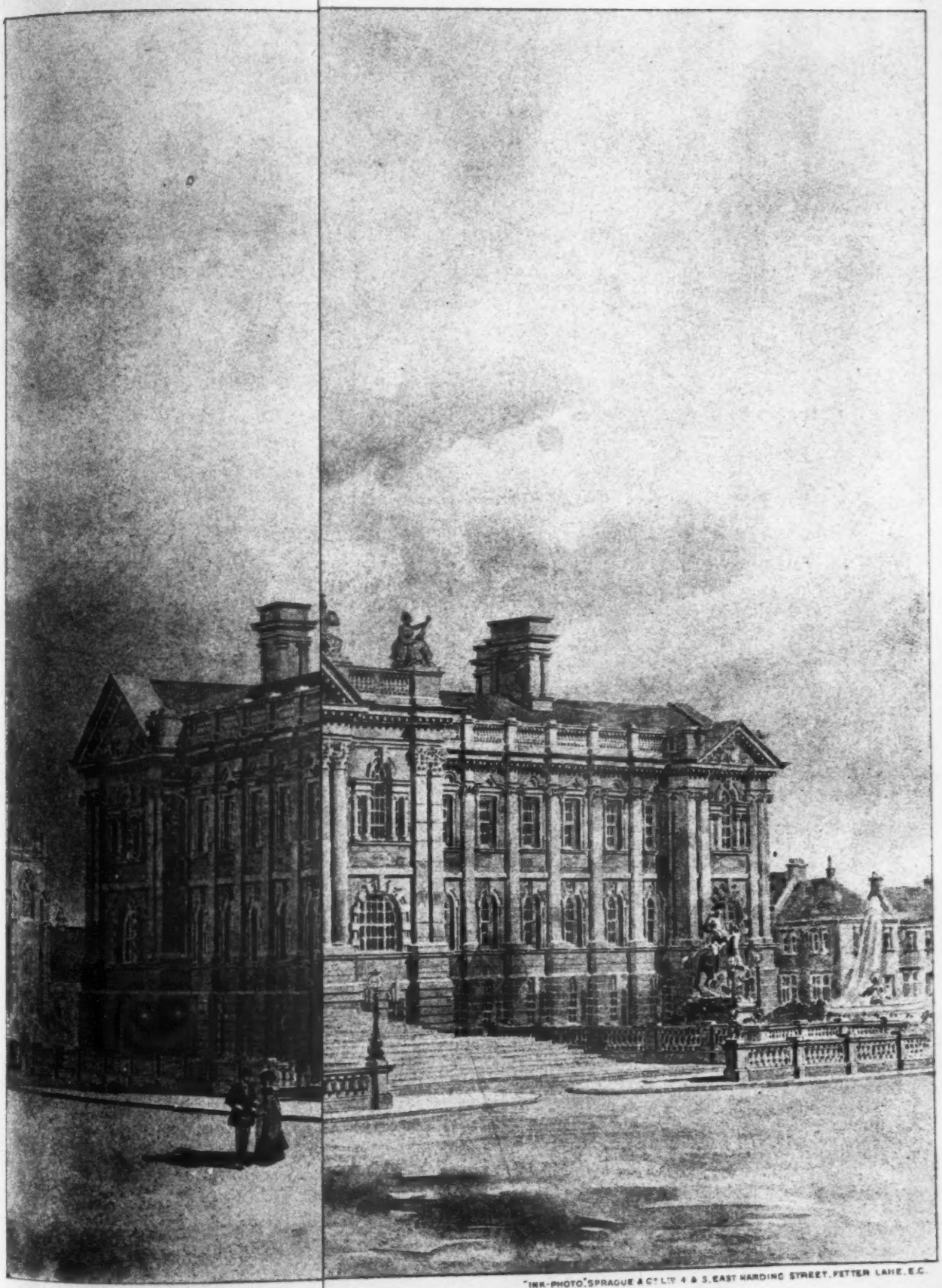
The roof is of open timber work, the ridge being 33 ft. from the floor.

From various causes the design has never been carried out.

G. H. FELLOWES PRYNNE.

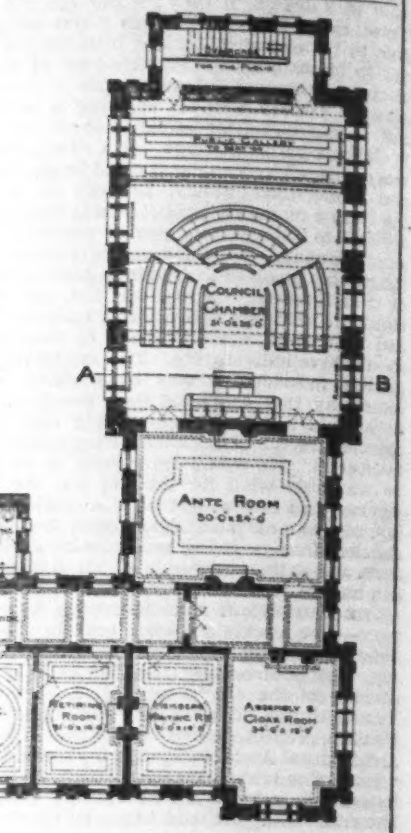
DESIGN FOR A CHURCH.

THIS rather unusual and powerful design for the east end of a church was made in competition for the Church of St. Peter, Sharrow. It is we understand properly speaking to be credited to Messrs. Eden & Williams, though



"INK-PHOTO" SPRAGUE & Co LTD 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

BLER, F.R.I.B.A.



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ILLBROOK CHURCH, DEVON.

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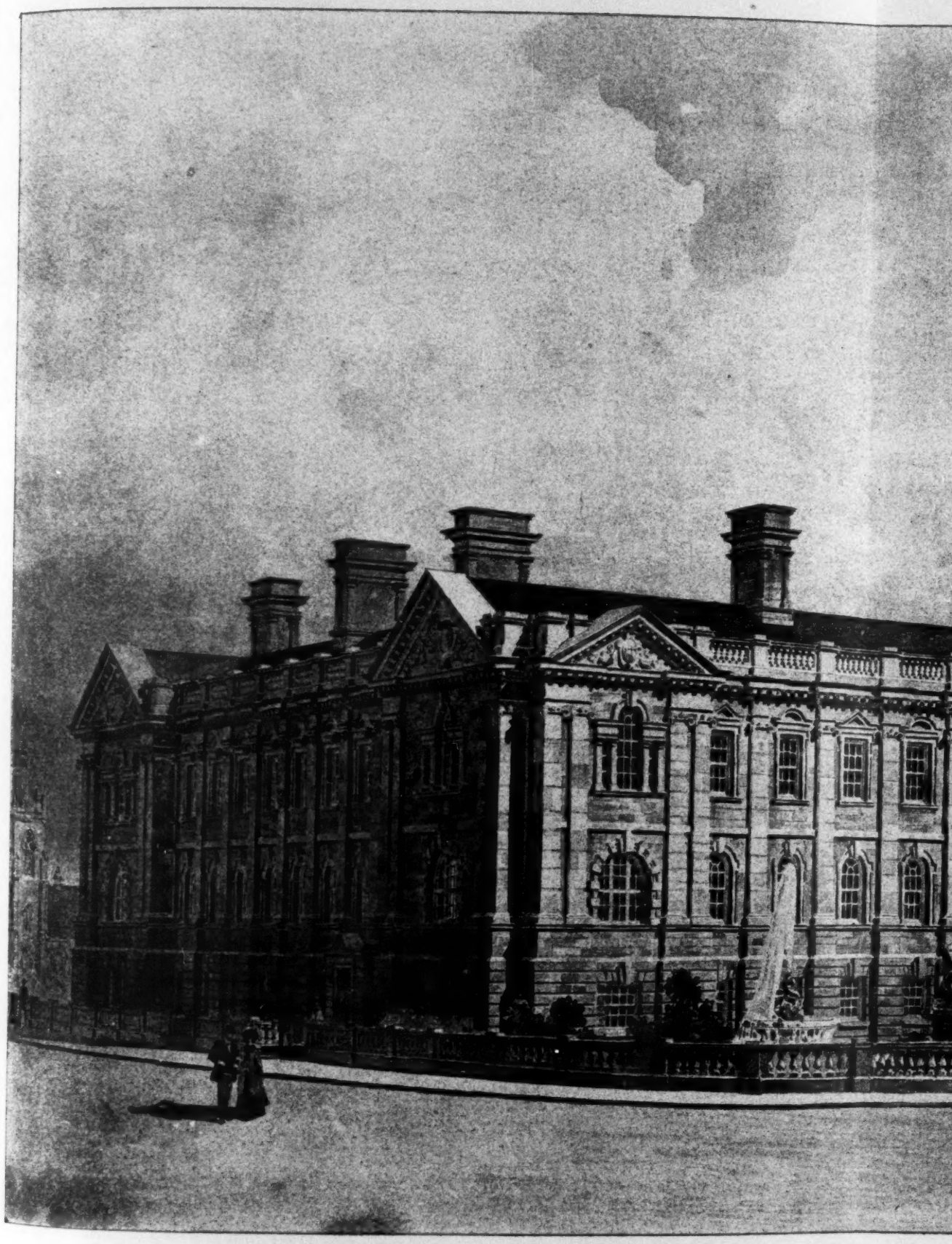
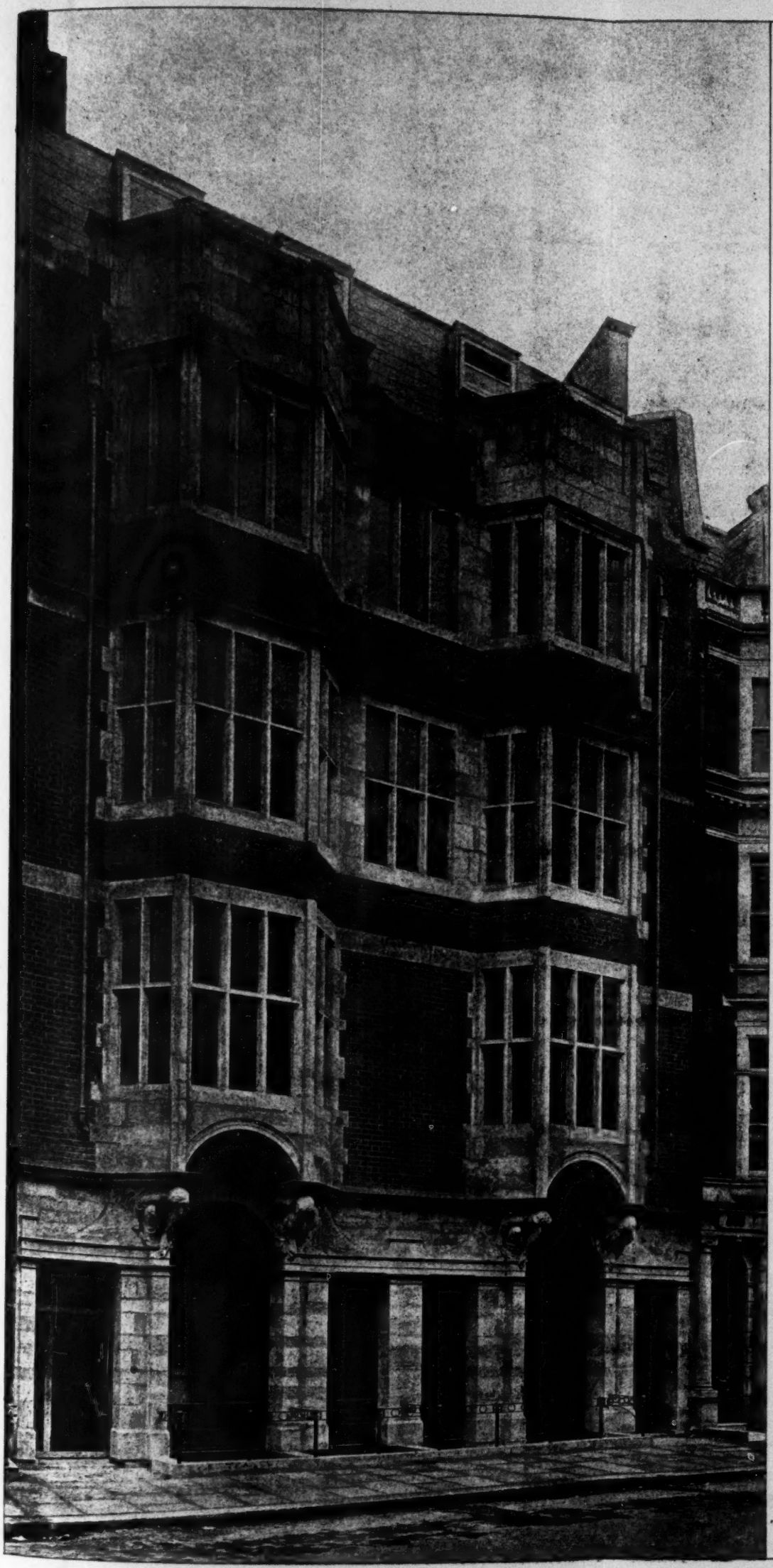


SOUTH SHIELDS MUNICIPAL BUILDINGS: DESIGN SU

"HALF-PHOTO" SPRAGUE & Co LTD 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

DESIGN SUBMITTED IN FINAL COMPETITION.—By Mr. Louis Ambler, F.R.I.B.A.



ELEVATION.

FRONT: Nos. 16 & 17 PRINCES STREET,

DETAIL OF ELEVATION.

"INK-PHOTO," SPRAGUE & Co. LTD. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

S STREET, CAVENDISH SQUARE.—MR. M. MABERLEY SMITH, ARCHITECT.

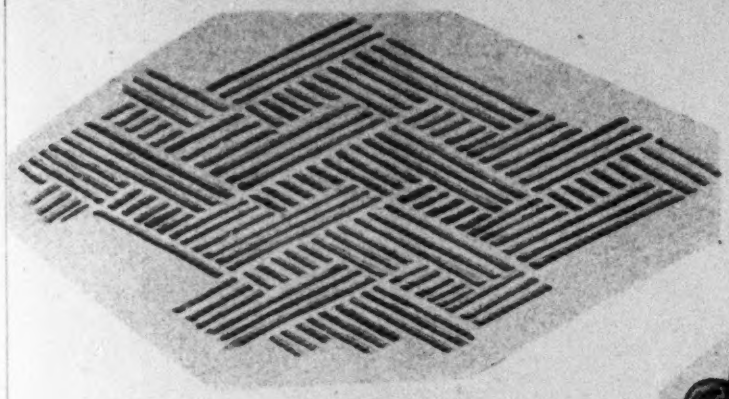


Fig. 1.

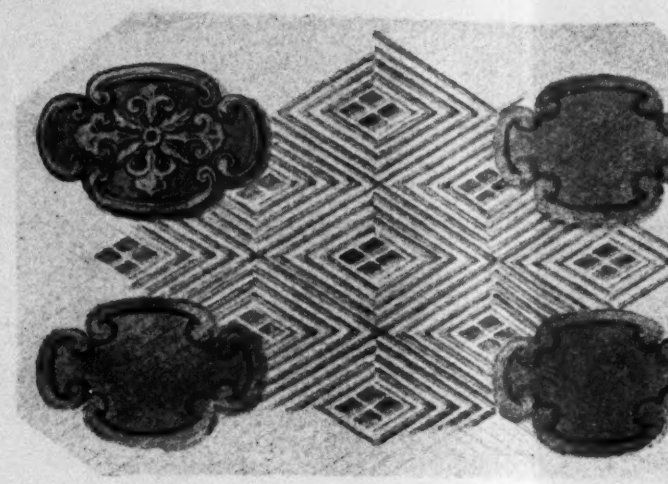


Fig. 4.

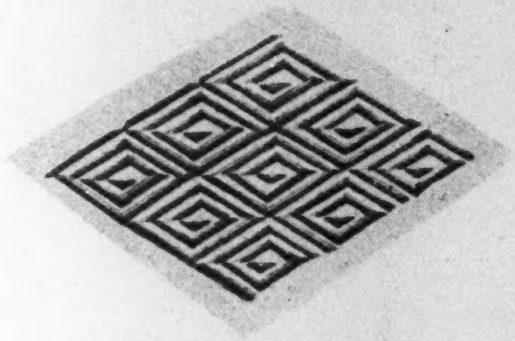


Fig. 2.

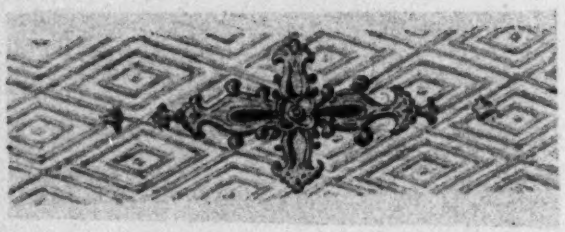


Fig. 3.

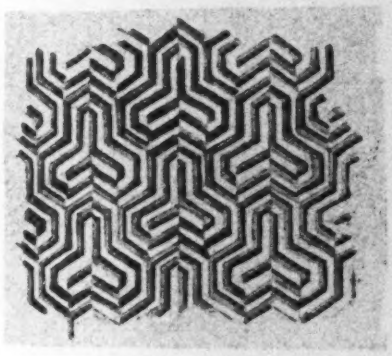
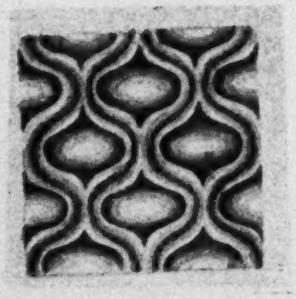


Fig. 5.

Fig. 6.



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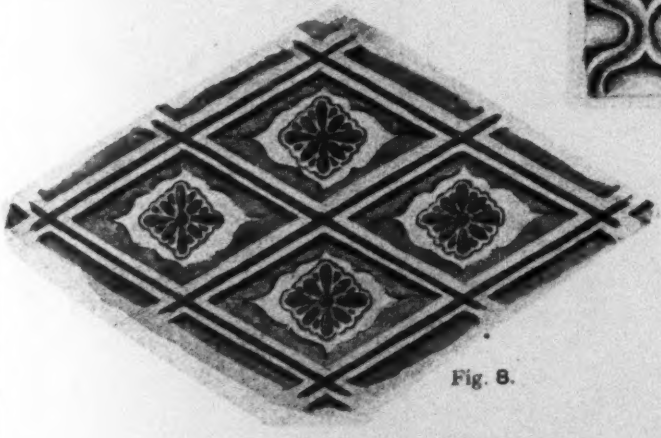
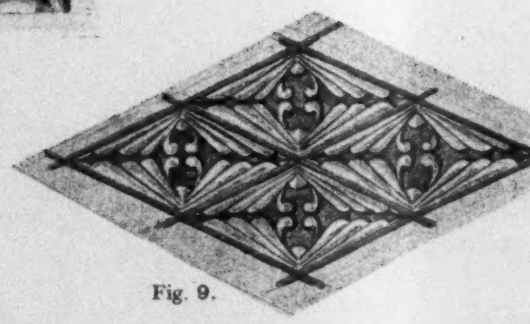


Fig. 8.



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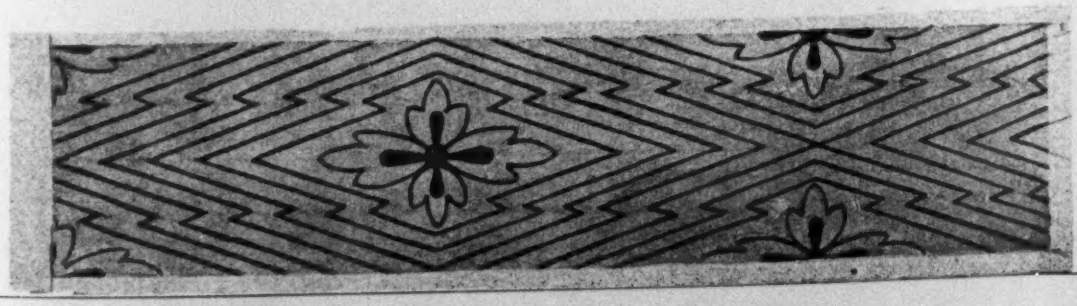
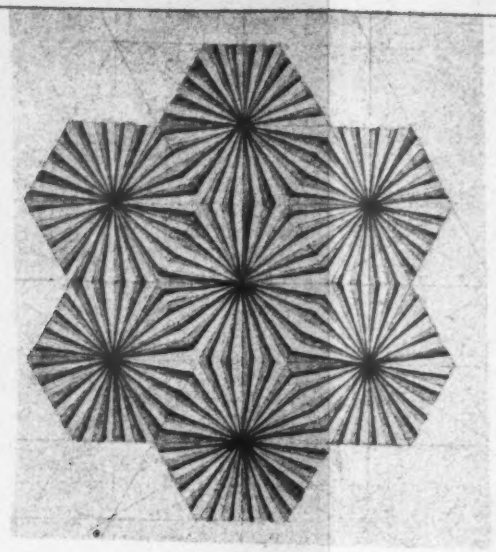


Fig. 10



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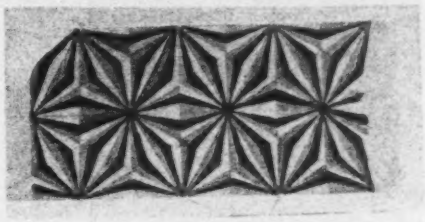
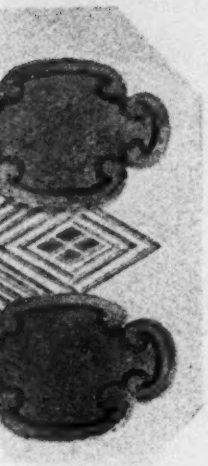
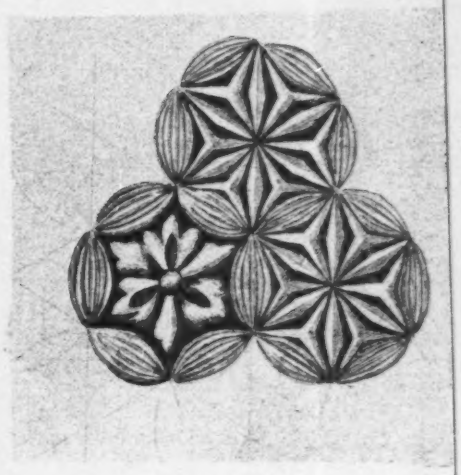


Fig. 12.





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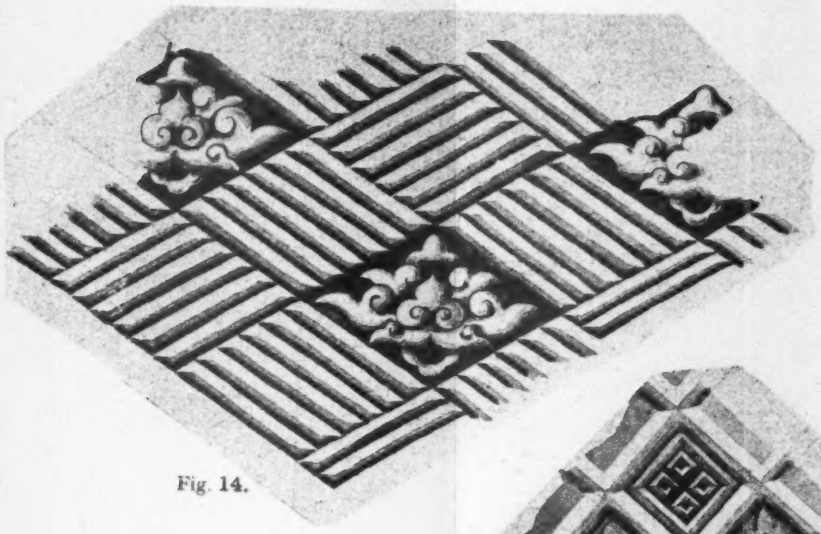

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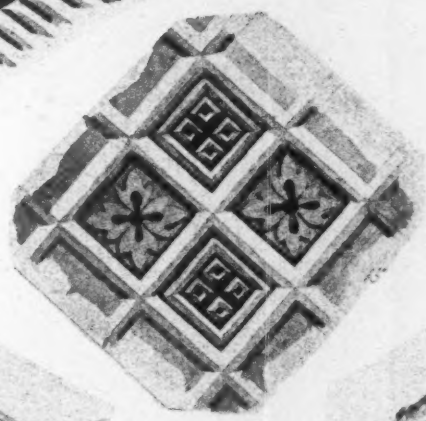

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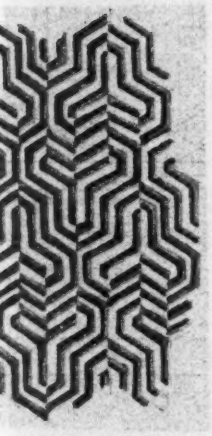

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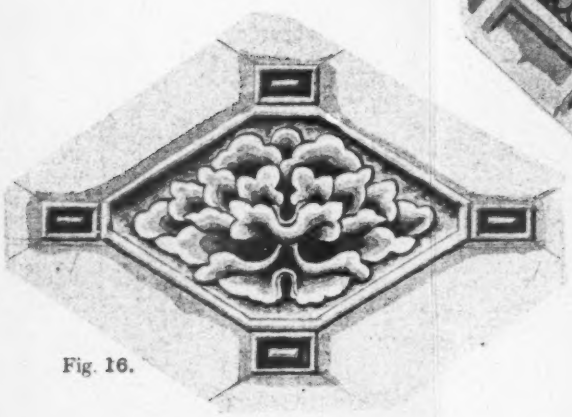

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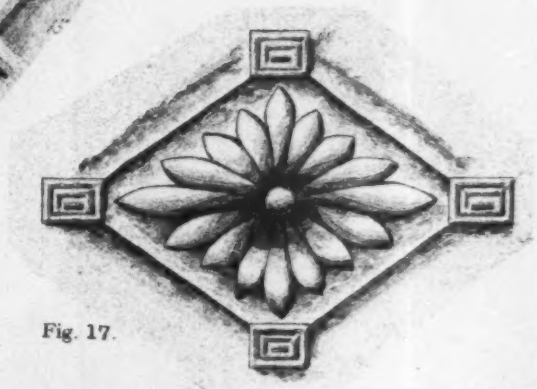

Fig. 17.

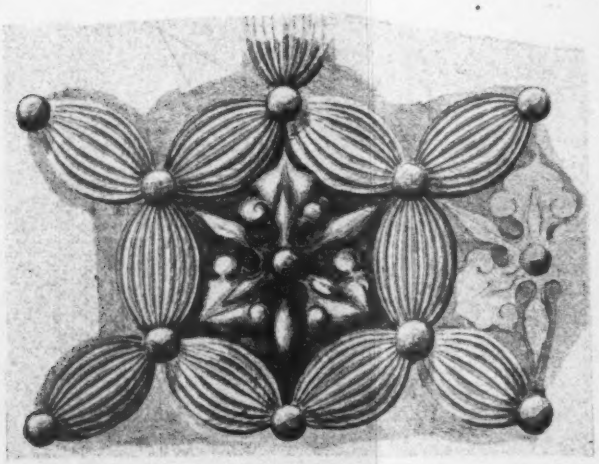

Fig. 18.

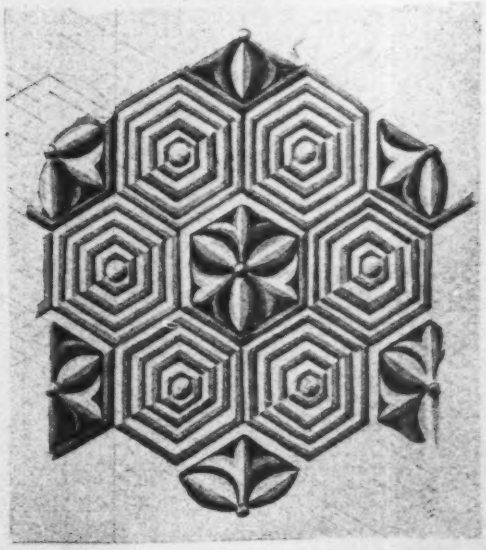

Fig. 19.

Fig. 10.

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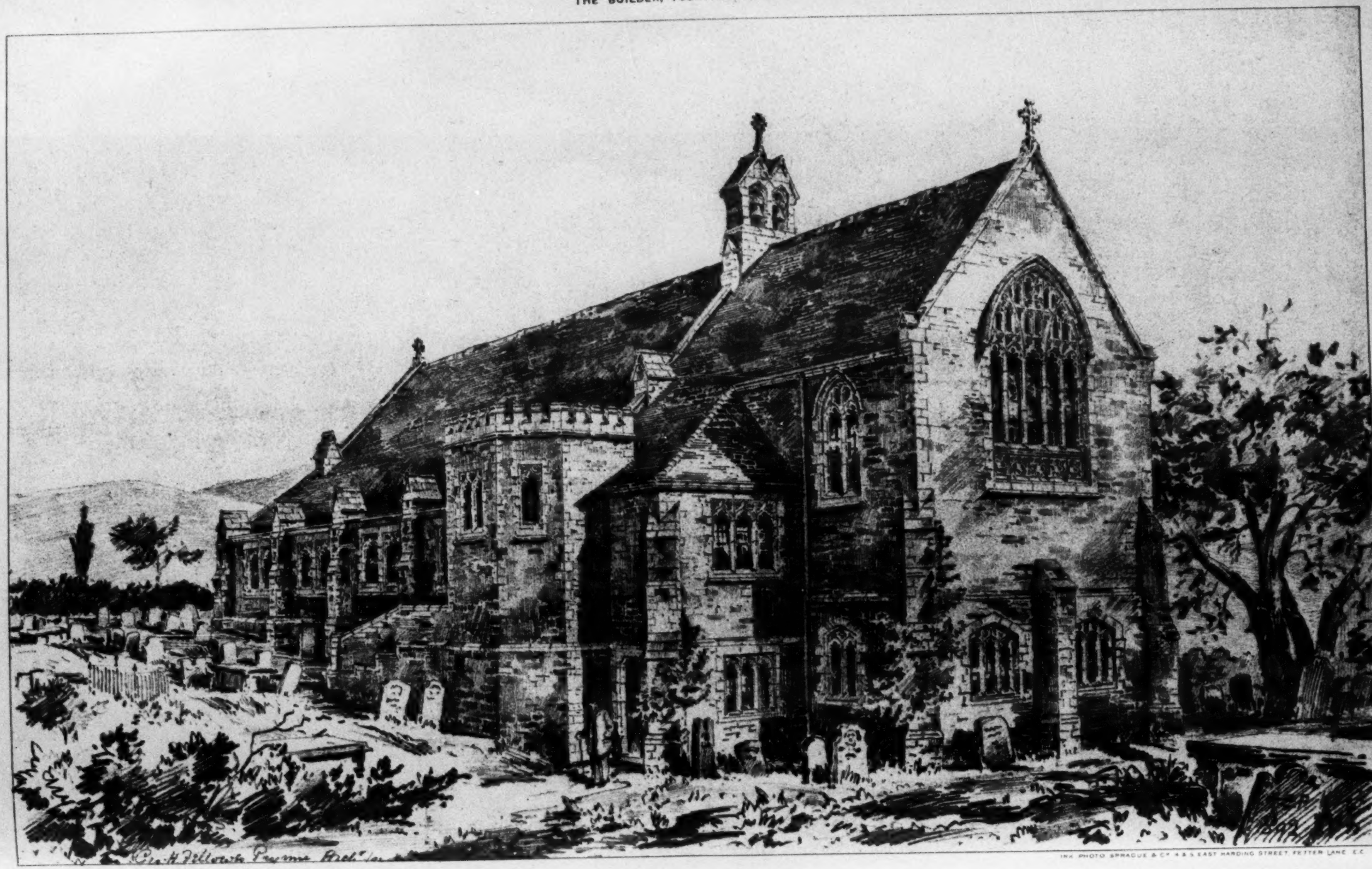
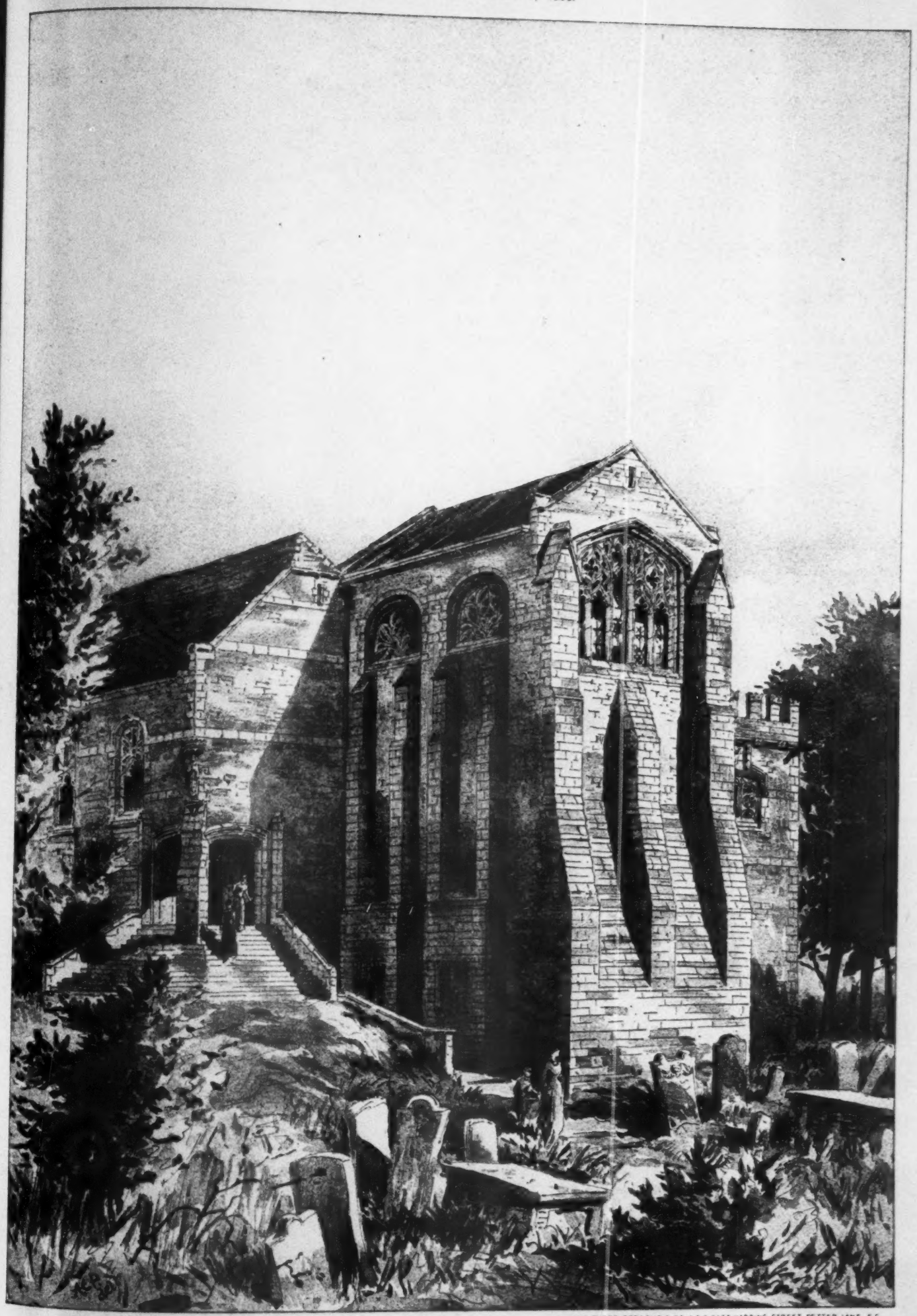
JAPANESE ORNAMENT.—III.



INK PHOTO SPRAGUE & Co 4 & 5 EAST HARDING STREET FETTER LANE E.C.

PROPOSED CHURCH, MILLBROOK.—Mr. Geo. H. Fellowes Prynne, F.R.I.B.A., Architect.



INK PHOTO SPRAGUE & Co 4 & 5 EAST HARDING STREET, FETTER LANE, E.C.

PROPOSED CHURCH, MILLBROOK.—Mr. Geo. H. Fellowes Peyne, F.R.I.B.A., Architect.

DESIGN FOR A CHURCH.—By Mr. F. C. Eden.

the name of Mr. Eden alone appears upon the plate, as it was sent to us by him in the first instance.

ILLUSTRATIONS OF JAPANESE ORNAMENT.

THESE illustrations are given in connexion with the article on Japanese ornament by "F. T. P.," printed on another page, and are referred to and described in that article.

APPLICATIONS UNDER THE LONDON BUILDING ACT, 1894.

THE London County Council at their meeting on Tuesday dealt with the following applications under the London Building Act, 1894. The names of applicants are given between parentheses :—

Lines of Frontage and Projections.

Paddington, South.—Balconies at the first, second, third, and fifth floor levels and an entrance porch at the ground floor level of a block of residential flats upon the site of Nos. 12-17, Hyde Park-place, Bayswater-road, Paddington (Mr. F. T. Verity for the executors of the late Mr. A. Bush).—Consent.

Fulham.†—Buildings at the Macmurdo-road schools, to abut upon Macmurdo-road and Woodlawn-road, Fulham (Mr. T. J. Bailey for the School Board for London)—Consent.

Hampstead.—A bay window to a dwelling-house on the north-west side of Richborough-road, Hampstead, at the north corner of Oak-grove (Mr. A. Cole for Messrs. Mackley Brothers.)—Consent.

Lewisham.—A porch at the entrance to a house on the west side of Oakcroft-road, Blackheath (Mr. L. V. Hunt for Mr. H. Stanton).—Consent.

Newington, West.—A one-story addition on the forecourt of No. 55, De Laune-street, Kennington (Messrs. H. Burman & Sons).—Consent.

Greenwich.—Retention of a greenhouse at the rear of Siebert House, Glenluce-road, Greenwich, abutting upon Westcombe Hill (Mr. E. Mills).—Consent.

Westminster.—Projecting iron and copper sign in front of Messrs. Vacher & Sons' premises on the west side of Great Smith-street, Westminster (Mr. G. Wragge).—Consent.

Brixton.—A one-story shop on the forecourt of No. 275, Clapham-road, Lambeth (Messrs. C. C. Lennard & Co. for Messrs. J. Commin & Co.)—Refused.

Dulwich.—One-story additions in front and at the flank of Derby House, Grove-vale and Melbourne-grove, Dulwich (Mr. H. G. Tarrant for Messrs. W. Martin & Co.)—Refused.

Islington, West.†—Three two-story dwelling-houses upon the garden at the rear of No. 330, Liverpool-road, Islington, to abut upon Orleston-road (Mr. A. J. Bellew).—Refused.

Norwood.—Buildings on the forecourt of No. 162, Norwood-road, Norwood (Mr. C. M. Quilter for Mr. C. Chisman).—Refused.

Hackney, Central.—Buildings upon the site of Nos. 171, 173, and 175, Lower Clapton-road, Hackney (Mr. J. Hamilton for Mr. F. Sharman).—Refused.

Hampstead.—Three houses with shops on a site on the eastern side of Edgware-road, to abut also upon Maygrove-road, Hampstead (Messrs. Done, Hunter, & Co., for Mr. H. Neal).—Refused.

Hampstead.—Buildings on the east side of Fortune Green-road, Hampstead, to abut also upon Weech-road (Mr. C. H. B. Quennell for Mr. C. Pain).—Refused.

Peckham.—A one-story showroom on part of the forecourt of No. 119, Linden-grove, Peckham (Mr. A. E. Mullins for Mr. Daniels).—Refused.

Woolwich.—One-story shops upon the forecourts of Nos. 57, 59, 61, and 63, High-street, Plumstead (Mr. H. Busbridge for Messrs. C. Carthew and S. T. Blackler).—Refused.

Strand.—The fixing of projecting illuminated sign letters on the south-west angle of the Palace Theatre, at the corner of Greek-street and Shaftesbury-avenue (Mr. P. A. Todd for the Palace Theatre Co., Limited).—Refused.

Width of Way.

Kensington, North.—Stables and coach-house, with dwelling rooms over, at the rear of No. 50, Kensington Park-road, at less than the prescribed distance from the centre of Portobello-road, Kensington (Messrs. C. R. Cross & Co. for Mr. A. Leaver).—Refused.

Width of Way, Lines of Frontage and Projections.

Newington, West.†—Ten houses on the site of Nos. 47 to 69 (odd numbers) inclusive, New-street, Newington (Messrs. Briant & Son for Mr. A. F. de Laune).—Consent.

Brixton.—Stable buildings on the east side of Lingham-street and south side of South Esk-street, Brixton (Mr. J. McMullen-Brooks for Messrs. C. Hammerton & Co., Ltd.)—Consent.

Hampstead.—The retention of a projecting bay in front of No. 108, Heath-street, Hampstead (Mr. J. D. Hunter for the Express Dairy Company).—Consent.

Marylebone, East.—A one-story bay window over, and a water-closet and lavatory addition adjoining, the porch at the entrance to No. 18, York-terrace, Regent's Park, St. Marylebone (Mr. A. M. Torrance for Mr. C. L. Hill).—Consent.

Dulwich.†—A bay window in front of No. 16, Wood-vale, Honor Oak, Dulwich (Messrs. C. B. Remnant & Son for Mr. S. Lamb).—Refused.

Strand.†—An iron and glass shelter to the entrance to the Villa-villa and Burke Hotel and Restaurant, Nos. 37 and 38, Gerrard-street, Soho (Mr. L. Sandilands for Mr. A. Taroni).—Refused.

Line of Frontage and Temporary Building.

Fulham.—The retention of an iron gas-meter house at the Mead Ambulance Station, Town Mead-road, Fulham (Mr. T. D. Mann for the Metropolitan Asylums Board).—Consent.

Space at Rear.

Chelsea.—A modification of the provisions of Section 41 with regard to open spaces about buildings, so far as relates to the proposed erection of a building, to be known as Sloane-gate Mansions, on the east side of D'Oyley-street, Chelsea (Mr. C. J. C. Pawley for Mr. Layton).—Consent.

Deviation from Certified Plans.

Kensington, South.—Deviations from the plans certified by the District Surveyor, under Section 43 of the Act, so far as relates to the proposed re-erection of the Civet Cat public-house, Nos. 72 and 74, High-street, Kensington (Mr. T. W. Willis, for Messrs. Truman).—Consent.

Strand.—Deviations from the plan certified by the District Surveyor, under Section 43 of the Act, so far as relates to the proposed re-erection of No. 1, Coventry-street, St. James's, Westminster (Messrs. H. Cooper & Sons, for Mr. H. Appenrodt).—Consent.

Marylebone, West.—Deviations from the plan certified by the District Surveyor, under Section 43 of the Act, so far as relates to the proposed re-erection of an addition at the rear of No. 63, Upper Berkeley-street, Marylebone (Messrs. Mullet, Booker, & Co., for Mr. S. Quick).—Refused.

Finsbury, Central.—Deviations from the plan certified by the District Surveyor, under Section 43 of the Act, so far as relates to the proposed re-erection of the Lord Wolseley beerhouse, No. 55, White Lion-street, Finsbury (Mr. H. H. Tasker, for Mr. C. Kilby).—Refused.

Formation of Streets.

Dulwich.—That an order be issued to Messrs. J. Newton & Co., sanctioning the formation or laying out of a new street, for carriage traffic, to lead from Balchier-road, Forest Hill, Camberwell, to Forest Hill-road (for Mr. J. Newton).—Consent.

Lewisham.†—That an order be issued to Messrs. D. Smith, Son & Oakley, refusing to sanction the formation or laying out of new streets for carriage traffic on part of the Crofton Park estate, on the eastern side of Crofton Park-road, Brockley, Lewisham (for Mr. J. W. Webb).—Refused.

Means of Escape at the Top of High Buildings.

Westminster.—That the applications of Mr. C. J. C. Pawley, for permission to make certain deviations from the plans approved by the Council on November 26, 1902, with respect to the means of escape in case of fire, proposed to be provided in pursuance of Section 63 of the Act, on the sixth and seventh stories of blocks A, B and C, of St. James's-court, Buckingham Gate, Westminster.—Consent.

*** *The recommendations marked † are contrary to the views of the Local Authorities.*

Correspondence.

THE QUANTITY SURVEYOR.

SIR,—Mr. Wood's description of the Surveyors' Institution as a body largely composed of auctioneers and estate agents is not reasonable. The inference drawn from such terms by those who do not know the facts would be that they are persons who are principally considered in selling household furniture or letting houses.

There are two classes eligible for membership :—

1. Land agents and surveyors.
2. Quantity surveyors.

Both of these classes are subjected to an examination, differing for each class. The land agent does not pose as a quantity surveyor, nor the quantity surveyor as a land agent. There are also special examinations in forestry and sanitary science.

Criticism of the knowledge of quantities of an "auctioneer and estate agent" is beside the question. No one ever supposes that they know much about them. It is, however, the fact that such of the members as are auctioneers have in the majority of cases passed the Land Agency Examination.

The Surveyors' Institution has been established about thirty-five years, has been habitually governed with conspicuous judgment and success, and the number of its members is strong evidence that it supplies the wants of the profession. This Institution has absorbed a large proportion of the land agents and building surveyors who know their business, and it comprises among its members a great number of men of distinguished attainments and high character—is, in fact, an association to which any professional man may be proud to belong.

What has the Surveyors' Institution done for the surveyor?

It has established an admirable system of examination. It may be objected that this examination is not of sufficient stringency, but it should be realised that all systems of professional examination must be regulated by the general level of education of the class from which its members are drawn, otherwise they would operate as effectual deterrents to applicants, but all the professions have raised their standard of examination concurrently with the progress of education. I think the Surveyors' Institution is not oblivious of the principle, and it is certain that their examinations have very materially raised the level of the education of the surveyor.

In the conflict of opinions on important questions such as the law of light and air, the operation and reform of the London Building Act, the London water supply, the housing of the working classes, and general building law, the Surveyors' Institution has taken a prominent and powerful part. It has established, by its professional *Notes*, a truly valuable means of intercommunication among its members. The extraordinary mass of answers on questions of law and practice contained in the ten published volumes of these *Notes* is a striking monument of care and skill. More than thirty volumes of *Transactions* in which hardly any paper descends to mediocrity have contributed a valuable store of opinions and luminous debate to the literature of the surveyor's business.

It is a fashion with many quantity surveyors to decry the functions of the land agent. Such as do so surely do not realise the important and diverse interests inseparable from the management of great estates, and the ability and assiduity which they demand from the surveyor.

It has been a subject of complaint that the greater number of papers read before the Surveyors' Institution pertain to land agency sections, but it is certain that the council of that body never rejects a paper of value on the building side. Moreover, nearly all the vital questions affecting the quantity surveyor and of sufficient importance for the foundation of a paper have been discussed already. The preponderance of the papers in the land agency section may be accounted for by the wide range of subjects with which the land agent is concerned.

The policy which will prove most effectual in raising the condition of the surveyor and increasing their strength as a body will be the unity of the surveyors of all parts of the kingdom in one institution, a condition which would, among other benefits, contribute to that uniformity of practice which is thought by many to be desirable.

What does Mr. Wood offer us? A new Association, without funds, without prestige, with few men of weight as members (for the majority of such are already members of the Surveyors' Institution and have sense enough to adhere to it), without any machinery of examination, without a building, and without any important grievance that they can profess their intention to redress.

The registration of the quantity surveyor is as impracticable as the registration of the architect. Such a project can offer small attraction to any persons except those who despair of being accepted as members elsewhere, and who would be about the last from whom any valuable reform might be expected.

Does Mr. Wood think he will forward his scheme by suggesting (as he does) invidious comparisons between the quantity surveyors of different parts of the kingdom? The compliment to one section must tend to estrange the other.

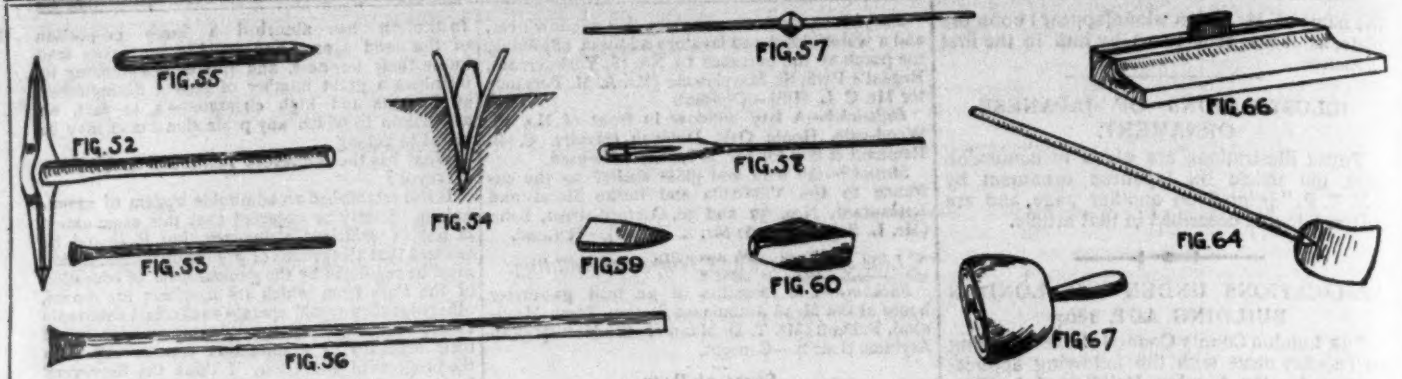
As to the attachment of letters to Mr. Wood's signature, my letter dealt with what I thought to be generalities, and was not intended to be personal. The ostentation of which he accuses me has been confined to the letters "F.S.I." on the headings of letter paper, to business cards and the title-pages of books.

JOHN LEANING.

THE GARDEN CITY PIONEER COMPANY.

SIR,—This company, as many of your readers probably know, has been formed to acquire an option of purchase of a large estate, and to then develop it in the best manner as an entirely new industrial and residential town.

To carry out the scheme effectively, electrical power and light works, water works, roads, and many other enterprises involving an outlay of large capital and the employment of many workmen, will be necessary at an early stage. Those workmen will need to be housed, and it will be most desirable to house them on the estate and in permanent, as distinct from temporary, dwellings. Therefore one of the first things to be done will be to erect a considerable number of cottages. Now, it is most desirable that those cottages should be planned in the best possible way and afford the best accommodation, consistent with their being



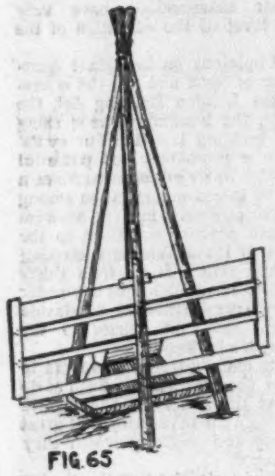
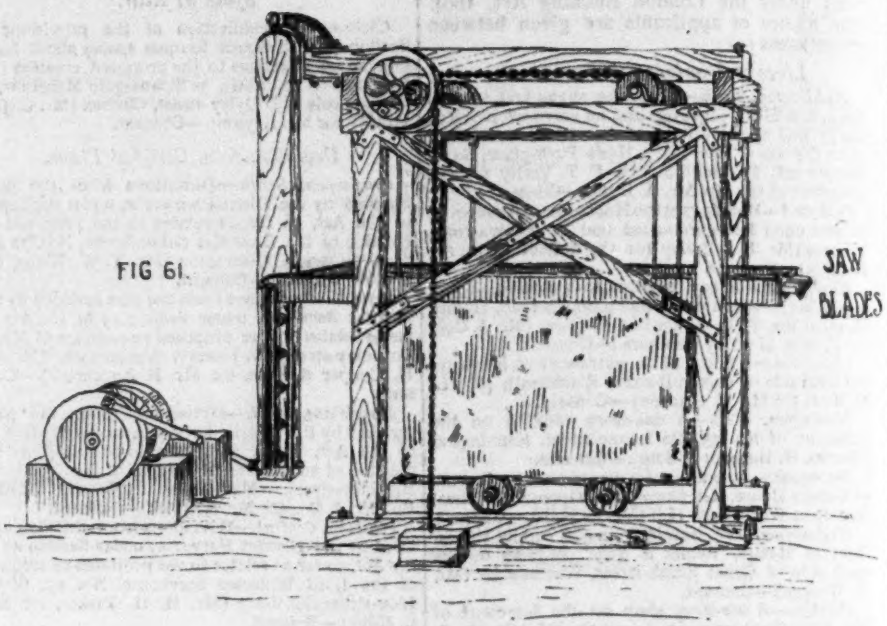


FIG.65



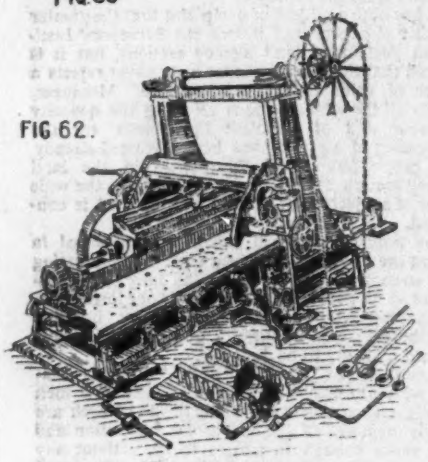


FIG 62.

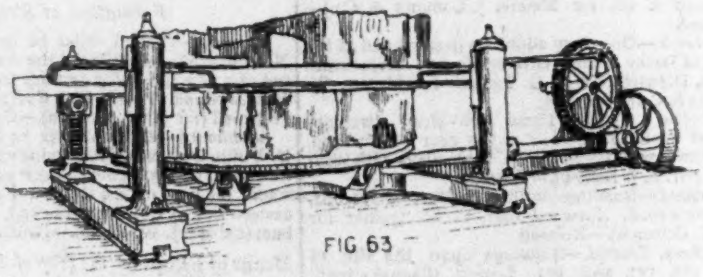


FIG 63

Fig. 52.—Quarry pick.
Fig. 53.—Steel drill.
Fig. 54.—Plug and feathers.
Fig. 55.—Boring bit.
Fig. 56.—Miners' jumper.
Fig. 57.—Jumper proper.
Fig. 58.—Tamping bar.
Fig. 59.—Gad.
Fig. 60.—Wedge.
Fig. 61.—Sawing machine.
Fig. 62.—Stone dressing and moulding machine.
Fig. 63.—Rubbingmachine.
Fig. 64.—Mason's server.
Fig. 65.—Mason's frame saw.
Fig. 67.—Mason's mallet.

Illustrations to Student's Column.

let at a rent which will place them within the means of the workmen employed. The Company will probably assign to each cottage a space of not less than 220 sq. yds.; but as this represents more garden ground than many would care to deal with, the idea occurs to me that a large part of the back garden space might be thrown into a central quadrangle and let in allotments to those who require it.

My object in writing this letter is in the hope of inducing some of your readers to make useful suggestions towards the carrying out of such a plan; but I need hardly say that the project will afford scope, not only for the building of workmen's cottages, but for superior residences and for the erection of large buildings, and these so arranged with open spaces around them as to secure a combined and harmonious effect rarely seen in our English towns.

Ebenezer Howard,
Director and Manager.

Association of Municipal and County Engineers.—Owing to pressure on our space we are obliged to omit the report of the meeting of this Association at Birmingham, which will appear in our next issue.

National Federation of Building Trade Employers.—At the annual meeting of the National Federation of Building Trade Employers of Great Britain and Ireland, held in London, Mr. Charles W. Green, of the firm of Messrs. Holme & Green, of Liverpool, was appointed President for the ensuing year.

The Student's Column.

BUILDERS' TOOLS AND THEIR USES.

Chapter 3.

Freestone Mason.

It will be necessary to divide this chapter into three parts—Quarrying, Stone Conversion, and Tools of the Freestone Mason—embracing the various processes undergone by stone from its removal out of the earth to its final position in the building, and describing the tools and machinery employed for this purpose.

A brief account of the first may be interesting and helpful, especially as many quarries are now owned by builders; while the cutting and conversion of stone, either at the quarry or in the yard, is a natural sequence with which the student ought to be acquainted. The special tools used by the mason in finally working the material will then be dealt with, together with descriptions of the modes of dressing.

By freestone is meant the comparatively softer kinds, such as certain sandstones and limestones, which can be freely operated upon with the ordinary tools of the mason.

Quarrying.

After the "cap rock" or "stripping" soil covering the building-stone deposit has been stripped off, either by blasting or otherwise, the area thus laid bare is quarried in one of three ways—by hand tools, by explosives, or by channelling and wedging.

Hand Tools are used when the stone is of an inferior quality, thin and friable. They comprise the pick, crowbar, steel wedge, hammer, drill, and plug and feathers. The quarry pick (fig. 52), crowbar, and wedge are required to force apart the layers, which are then broken up by the hammer, a heavy sledge of 10 or 14 lbs. weight. The steel drill (fig. 53) is for cutting the holes to receive the plug and feathers, the operator grasping it with one hand and using the other to strike it with a hammer, rotating the drill between each blow. The plug and feathers are employed for splitting unstratified rock by inserting them in a row of holes—about ¾ in. diameter and some 6 in. apart—along the proposed line of fracture, and driving them all together, when the stone will crack with the trace thus indicated. These instruments consist of a steel plug or wedge, 5 in. long by ¾ in. wide, and two curved half-round pieces of mild steel, 4½ in. long by ¾ in. wide, forming three to a set, the plug being forced with the hammer between the feathers till the desired cleavage occurs (fig. 54).

In the Bath district the building stone is never blasted because of the tendency to shatter and waste, but it is sawn *in situ* by

means of a one-handled saw, the blocks so divided being lifted from their beds with the aid of iron bars. Subsequently, any rough surfaces thereon are shaped by means of a two-edged quarry axe. As a large portion of Bath stone is procured from mines, underground tunnels or shafts are first sunk, and the material removed from thence by jad-picks, four lengths in the handle, viz., 2 ft. 6 in., 3 ft., 3 ft. 6 in., and 4 ft., used in turn as the stone is picked away from the ceiling of the quarry to make a passage for the one-handle saw, to cut it into blocks, which are torn from their bottom beds by wedges, and then finally removed by long steel bars, lewises, and cranes, the latter at the top of the heading for haulage purposes. In sawing underground, water is always required, not so much that it makes the stone softer along the line of cutting, but becauses it washes out the dirt made during the operation, and thus frees the cut of obstruction.

Explosives.—Blasting should be avoided as far as possible in obtaining building stone, as it shakes the material and causes waste. It is, however, the cheapest method of quarrying small blocks, though large ones are often procured by the same means. Holes of 1 in. and upwards in diameter are first pierced in the rock to the necessary depth with boring bits, jumpers, or machine drills. The boring bit (fig. 55) is a short bar or drill, held by one man who turns it between the blows of another man's hammer, while the jumper (fig. 56) is a heavy iron bar, with either a projecting chisel-shaped end or a spiked point. The reason why the cutting edge is wider than the diameter of the tool is that it may clear itself when sinking the holes. The jumper proper has a weight in the middle, or about 2 ft. from one end, to give greater impact to its descent (fig. 57). It cuts by its weight alone, the workman letting it drop and twisting it in the aperature after each rebound or jump. It is about 6 ft. long and has two bits, one for pitching, say about ¾ in., and the other (called the bottomer) for pitching about ½ in. less. The tool is used with both hands, and makes twenty or thirty holes per hour, the holes being about 4 in. deep and 4 in. apart for granite. Machine rock-drills, driven by steam or compressed air, are engaged in works of magnitude, where they are rapid and effective.

The hole when completed is charged with coarse-grained gunpowder, dynamite, or other explosive, and the remaining space rammed with dry clay, sand, or chips of rock, called "tamping." This is forced down with the tamping bar (fig 58), some 4 ft. in length, which has a thickened end with a groove to let out the fuse, and a copper termination to prevent the likelihood of striking fire. The firing fuse may also be protected by a groove in a piece of wood, or by a tube, and should burn at about the rate of a yard per minute, Tangye's or Bickford's fuse, costing from 2d. to 4½d. per fathom, being very serviceable.

As stone is invariably shattered by heavy blasts, repeated light charges are preferable for detaching without disintegrating. A cubic yard of solid rock in ordinary quarrying will require ¼ lb. to ¾ lb. of powder; and the explosion starts a mass whose volume approaches the cube of the line of least resistance, which is the shortest distance from the charge to the nearest surface. Electricity is convenient to explode several charges simultaneously, and for great blasts indispensable.

Channelling and Wedging.—This mode of quarrying is adapted to rocks lying in layers, and possessing certain planes of cleavage along which they readily split, or to stone that is too hard to break up with the ordinary hand tools, but not so tough as to necessitate explosives. Rock in the former state is easily cleft by running narrow channels along its line of bed, and inserting and driving a series of steel wedges. Rock-drilling machines are frequently made to cut these grooves, being mounted so that they can be moved forward as the work proceeds. Blocks of harder unstratified stone are loosened by channelling as before, and sinking rows of "pool-holes," as may be found necessary, either with the boring bit or jumper. Into these orifices steel gads and wedges, 4 in. to 6 in. long (figs. 59 and 60), are impelled with the hammer, the process being termed "gadding and wedging"; or plugs and feathers may be requisitioned if the material is not too refractory. This method is economical and expeditious for large masses, except in granite and the hardest rocks.

Stone Conversion.

By stone conversion is here meant that portion of our subject which deals with stone-working machinery and its associations than the actual cutting of the material by hand, which will be treated under the head of "Tools of the Freestone Mason." A great deal of stonework, especially of the softer kinds, is now dressed by machinery, and it will not be out of place to illustrate and describe a few appliances, especially as the advantages possessed by machinery over manual labour are becoming more widely known, and its use greatly extending.

Mr. Powis Bale, in his book on stone-working machinery, says:—"What can machinery do in the way of stone conversion? At the present time this may be briefly summarised as follows:—Stone may be sawn, dressed, squared, faced, and polished. Architrave mouldings, cornices, ovolos, pilasters, astragals, ogees, scotias, strings, and other straight, undercut, and curved mouldings may be shaped and finished in every way superior to—and at an immense saving over—hand labour. All the heavy work in small mouldings, panels, recesses, &c., can be also worked. A well-designed machine should dress (work faces and beds) 30 ft. per hour stones of moderate hardness. The cost of this, allowing two men and one boy to supply stone and attend machine, would amount to about 2s., whilst an average price to dress the same by hand would amount to about 5s."

Those stones which are homogeneous, strong and tough, and comparatively free from grit, can be worked by machines which resemble those used for iron; but the harder and more brittle kinds require to be fashioned in a style similar to dressing by hand.

A *Sawing Machine* for stone and marble is shown in fig. 61. In this apparatus the saw frame is actuated by a pendulum driven by a connecting rod and crank from the belt shaft in the usual manner. The vibrating frame is strongly made, and is provided with convenient means for setting the saw-blades so that blocks may be cut into any number of required slabs. The wearing surfaces are made adjustable to keep the frame true in its motion, while the stone operated upon is transported by means of a truck running on rails. The connexion from driving shaft to pendulum is made direct by a connecting rod attached to a heavy fly-wheel disc. Such a machine will take blocks varying in size from 6 ft. by 3 ft. 6 in. by 3 ft. 6 in. to 14 ft. by 7 ft. by 7 ft. The action of stone saws is assisted by sand and water fed into the cut, or by carbons or black diamonds.

There are also Circular Dry Saws which cut Portland or stones of similar hardness, with a feed of 6 in. per minute; they have been constructed up to 13 ft. in diameter. The saw gives the stone a plane surface at once, any roughness left being removed by rubbing with grit or sandstone.

Brunton and Trier's *Stone-dressing Machine* is much employed for the purpose indicated by its title. Its essential feature is a set of four small chilled cast-iron discs, with bevelled edges, obliquely planted in the vertical surface of a large wheel, which turns somewhat slowly, the stone being made to traverse on a table while the machine itself is in a fixed position. These discs, rotating rapidly at the rate of 1,200 revolutions per minute, grind the surface of the block as it passes. This apparatus will dress stones up to 4 ft. on the face and 6 ft. long, and, if driven by a 5 h.-p. to 6 h.-p. engine, will dress from 280 ft. to 350 ft. super. of stone per day, thus doing the work of from twenty to thirty masons in an economical manner.

A *Stone-Dressing and Moulding Machine*—also called a Steam Mason—is used for marble as well as for freestone. It is illustrated in fig. 62, with a large piece of stone being worked. Such an implement meets all the ordinary requirements in dressing stone, as it is able to cut off 1 in. in thickness of hard grit stone, and proportionately more in softer material, at the same time leaving a true and smooth surface. It may therefore be used in quarries, first for scabbling blocks out of the rough state, and then dressing them on one, or all sides, ready for fixing. The machine will do the work of ten men. In hard grit stone it will dress 180 ft. super., at 1d. per ft. super., per day of nine hours, to a surface superior to clean boasted work. It is also capable of working any ordinary straight moulding, and an astragal moulded step, 6 ft. by 1 ft. by 7 in., may be dressed on all four sides ready for fixing in one hour. The force required for driving is very small, an engine of 6 h.p. being sufficient for two or three machines. These are made with tables from 8 ft. to 12 ft. long, and a strong vice is fixed on the latter for the purpose of holding the block in position. A patent rocking-table can be used, by means of which a stone, when once fixed on it, can, in half a minute, be turned any side up, or set at any angle ready for cutting. For working mouldings the rocking-table is invaluable, and an apparatus with a 12 ft. table will dress a stone 12 ft. by 5 ft. by 4 ft. in size.

Machines which attack the rough blocks and reduce the inequalities somewhat are termed "stone-cutters." After this treatment the material goes to the stone-grinding and stone-polishing appliances, except when the moulding-machine is required. The two former differ only in the degree of fineness of the surface produced, and are sometimes styled *rubbing machines* (fig. 63). The rubbing is accomplished by placing the stones upon a horizontal circular plate of cast iron, 12 ft. or so in diameter, and revolving at great speed, to which water and fine sand are continually applied as found necessary, the stone being braced to prevent its sliding; several small stones can be done at once. A little stream of water works the sand under the blocks, and also carries away the *débris*. The rubbing of mouldings, &c., is done by hand. One of these machines will dress about 400 feet superficial per day at a cost of 1d. or 2d. per ft. The advantage of this apparatus is that it takes the stone in the rough state and reduces it by rubbing to a true polished surface without the previous aid of chisels. This rubbing is frequently called polished work.

Tools of the Freestone Mason.

The following tools are employed by the freestone mason:—

1. Frame saw.
2. Mallet.
3. Scabbling hammer.
4. Spalling hammer.
5. Waller's hammer.
6. Pitching tool.
7. Punch.
8. Point.
9. Inch tool.
10. Boaster.
11. Broad tool.
12. Drag.
13. Iron rubber.
14. Square.
15. Straight edges.
16. Winding strips, &c.
17. Templets and moulds.
18. Sweeps.
19. Rule.
20. Spirit level.
21. Compasses.
22. Hand Barrow.

Trowels, lines and pins, spirit level, plumb level, rods, mash hammer, hod, mason's servers or shovels (fig. 64), &c., are also used by the wall mason or waller for the setting of the stone in actual building operations. The mason's banker is like that of the bricklayer, but is frequently of stone instead of wood.

The *Frame Saw* of the mason consists of a long, thin steel blade, 4 in. by $\frac{1}{10}$ in. with no teeth, but sometimes slightly jagged at the edge. It is fixed in a wooden frame and horizontally worked backwards and forwards by two men, cutting the stone by its own weight. To facilitate the operation, clean, sharp sand is washed into the "kerf" or saw-cut by water trickling down an inclined plane from a trough or vessel above. For soft stones an ordinary two-handed tooth saw is often employed

If it is required to saw large blocks a heavier type of implement is essential, hanging from a tripod and worked by two men as before (fig. 65). A trough or vessel is kept filled with sand and water, which runs down through a slit at the bottom on to a sloping piece of slate and into the cut made by the moving saw. Such an apparatus is permanently set up in the mason's yard.

A small hand saw with a wooden back, as sketched in fig. 66, is convenient for cutting grooves in window sills to receive iron tongues. It is simply pressed backwards and forwards, with the addition of sand and water. Carpenter's saws are frequently used for cutting soft stones.

"Sawing or half-plain work" is the term applied to that face of the stone which comes from the saw, such as the surfaces of joints, which present a smooth appearance. For a description of "plain work" see further on.

The *Mallet* is of beech, and is used for striking the chisels, points, &c., and for tapping the heavier stones into position. It has a short handle and cylindrical head, 7 in. across. Being of wood it delivers just the kind of dull blow that is required by the stonemason. Fig. 67.

The dummy is a similar but smaller mallet, convenient for carved work.

OBITUARY.

SIR GEORGE GABRIEL STOKES.—During the past week many eminent men of science have died, but none who have attained to the eminence of Sir George Stokes. The world is the poorer by his death in that he was a philosopher of the old school, and there are very few men of his stamp left. It is all very well at this time of day to mark several rising men, and to note their progress in this or that science, to consult the publications of the Royal Society as to how many "papers" they have contributed to our knowledge, but we too seldom think of the pioneers of science who had no precedents to guide them, no "papers" to fall back upon from which to cull information, and nothing but opprobrium to stimulate them. A building might look artistic enough after it has been put up, but the difficulty is to design and plan it on a blank sheet of paper to begin with. The design and plan of many a difficult mathematical problem has rested, to begin with, with Sir George Stokes. His contributions in that direction have greatly facilitated girder construction and strains and stresses in buildings generally, though few people of the present generation would think so, as matters mathematical have been so much co-ordinated of late years. This reminds us that mathematics differs a great deal from the natural sciences in that, whilst the full meed of praise is nearly always bestowed on the original discoverers in such subjects as geology, zoology, and botany, it very rarely is in pure science subjects such as electricity, acoustics, and mathematics. We will not seize upon this occasion to enlarge upon this topic, but it is certain that such pioneers in mathematics as Sir George Stokes have never received their due even from their own colleagues—this not from neglect so much as from custom.

The public knows the late Sir George Stokes principally from the circumstance that towards the close of his academic career he was elected to Parliament by the University of Cambridge, where he was professor for so long a time. It is doubtful whether this election was a step in the right direction so far as university education is concerned; the professor, like most genial men of the old school, went down to his students, and they must have missed him. Although his inclination and his practice was to deal almost exclusively with higher mathematics, he had always a warm heart for such students as needed encouragement in lower stages, though their questions must at times have been painfully tedious for him to answer.

Like many professors of the old school (for he was born in 1819), he studied theology very ardently, and tried his best to assimilate that science with the pure and natural sciences. With this aspect of his career we have nothing to do. It is rather with the demonstrations to the few students whom he taught in the University—for there were never very many in his own classes, as he aimed at high teaching—that we are interested in. They were fraught with benefit, and, as we have said before, were of material assistance in laying the foundation-stones of modern pure mathematical science.

GENERAL BUILDING NEWS.

PRIMITIVE METHODIST CHURCH, BELFAST.—On the 28th ult., the new Primitive Methodist church at the corner of the Shankill-road, and Berlin-street was opened. The superstructure of the edifice is built of Laganvale selected brick, lined with Murphy's brick. Cut-stone work forms the buttresses and pediments to entrance doors, as well as the mouldings to windows. Polished granite columns are at the entrance doors, with carved base and capitals. The length of the building is about 65 ft. by 45 ft., with an end gallery, also a vestry and chamber for heating apparatus. The church is lighted by electric light. There is a tower at the corner of Shankill-road and Berlin-street, with spire. The whole of the exposed woodwork is pitch pine, the ceilings being sheeted diagonally into panels. Boyle's patent air-pump ventilators have been used. Additions are made to the present church so as to afford ample space for Sunday-school work, and a shop is built in connexion with the church. The plans have been prepared by Mr. John Fraser, C.E. (Messrs. Fraser & Son). The contractors are Messrs. C. & W. M'Quoid. Collapsible gates and ornamental railings have been erected by Messrs. Winnington & Co, electrical and mechanical engineers, under the supervision of Mr. Wm. Geddis. This firm also supplied the electric light installation. Stained glass windows were supplied by Messrs. Campbell Brothers.

CHURCH, CARDIFF.—The Bishop of Llandaff formally opened the new parish church of All Saints at Adamsdown recently. The new building provides accommodation for 330 worshippers. There are two stories, the basement being used as schoolroom, vestry, and clergy-room. The church has been built at a cost of 2,500*l.*, the architects being Messrs. Seddon & Carter, and the builders Messrs. E. R. Evans Brothers.

THEATRE, WEST STANLEY, DURHAM.—It is proposed to erect a new theatre at West Stanley, for the Stanley Royal Theatre Co., on a site near the Royal Hotel. Plans have already been passed by the Urban District Council and the local justices, according to designs prepared by Mr. William Forster, architect. The building will be constructed upon the two-tier system; and it will accommodate over 1,200 people.

ROMAN CATHOLIC SCHOOLS, NOTTINGHAM.—On the 29th ult. the Bishop of Nottingham, Dr. Brindle, D.S.O., laid the foundation-stone of the new classrooms being erected in connexion with St. Patrick's Schools, London-road, Nottingham. The additional rooms in course of construction on a site adjoining the existing building will provide accommodation for seventy infants, sixty-five boys and an equal number of girls. A separate entrance with a stone staircase leading from Leen-side is included in the scheme, and a small playground and communication with the present schools have been arranged for. The estimated cost of the new room is about 2,000*l.* Messrs. Evans & Sons are responsible for the architectural work, and the contractors are Messrs. J. H. Williamson & Son.

CHURCH, LANDORE, GLAMORGANSHIRE.—The memorial stone of the new Church of St. Paul's, Landore, was laid recently. The church will accommodate 700 adults, and consist of a nave 79 ft. by 29 ft., north and south aisles each 76 ft. by 11 ft. 8 in.; chancel, 36 ft. 6 in. by 25 ft.; organ chamber, 18 ft. 6 in. by 14 ft. 6 in.; and clergy vestry, 15 ft. by 17 ft. In consequence of a considerable slope in the site (quite 15 ft. from west to east in the length of the building), the choir vestry, 17 ft. by 14 ft., has been placed in the basement, and is reached by a wide stone staircase; and in addition to this accommodation a schoolroom, 34 ft. by 25 ft; and a classroom, 14 ft. by 18 ft. 6 in., is provided. The church is entered through porches on the north and south sides. The chancel will have a five-light east window. The west front has three two-light windows, between the buttresses. An octagonal bell turret will be placed on the south side of the chancel. The whole of the internal walls are to be lined with green Quarella stone from the Bridgend Quarries, and the arches, piers, and mouldings to the arcade, the jambs, tracery, &c., to the windows are of Bath stone. The roofs are to be open-timbered, and that to the chancel is a waggon-headed roof. Externally the walls are to be built with thin coursed grey local stone, and the jambs, arches, tracery, and other dressings are being executed in red Hollington stone, and the roofs will be covered with green slates. The system of heating adopted is by hot water. The work is being carried out by Messrs. Weaver Brothers, of Manselton Works, Swansea, from designs by Mr. Bruce Vaughan, of Cardiff.

EXTENSION OF LEITH MUNICIPAL BUILDINGS.—Leith Municipal buildings have just been extended from plans prepared by Mr. G. Simpson, the Burgh Architect. The five-story dwelling-house adjoining the present chambers in Charlotte-street came into the market, and was purchased by the town for the sum of 2,550*l.*, and during the past year workmen have been busily engaged reconstructing the premises to suit the requirements of the Burgh. No alteration has been made in the elevation, but the most has been made of the interior arrangements. The different departments of the new section, although in communication with the old section, are reached by a separate entrance and by means of a fine staircase. The basement of the building is occupied by offices for the outdoor sanitary staff and the lady sanitary inspector, and on the ground floor are the offices of the Medical Officer and the sanitary inspector. The first floor has been set aside for the Provost's room and a committee-room. On the second floor are a smoking-room and coffee-room. On the top story are two houses for officers. Alterations on the existing council chambers, including a new staircase and the rearrangement of the Town Clerk's department, are also contemplated. Provision has further been made for offices for the weights and measures officials and the Sheriff Clerk, and for seven additional police cells and a new muster-room on the back area of the acquired property. Including the purchase price, the whole alterations when completed will have cost about 12,000*l.*

PROPOSED COTTAGE HOSPITAL, LEATHERHEAD.—It is proposed to erect a cottage hospital at Leatherhead to commemorate the reign of Queen Victoria. Mr. Rowland Plumbe, of London, has been engaged by the Committee to prepare plans.

RESTORATION OF HORTON CHURCH, NORTHUMBERLAND.—On the 3rd inst. the Lord Bishop of Newcastle (Dr. Jacob) reopened the ancient parish church at Horton, which has just been renovated as a family memorial to the late Mr. George Baker Forster. The architects were Messrs. Hicks & Charlewood, and the contractors Messrs. Carse.

MISCELLANEOUS.

JUNIOR INSTITUTION OF ENGINEERS.—The Institution of Junior Engineers, the annual dinner of which will be held on the 14th inst. at the Hotel Cecil, will in future be called the Junior Institution of Engineers.

THE COST OF SCHOOL BUILDINGS.—The Hon. Lyulph Stanley presided on Thursday last week over the weekly meeting of the London School Board. The chairman of the Finance Committee (Sir Charles Elliott), in the course of his statement with reference to the loan estimate for 1903-4, pointed out that during the past ten years there had been very little change in the amount spent on school building; and the anticipation that, as the child population of London had ceased to increase, the indebtedness of the School Board on account of new schools would also stop growing had proved to be fallacious. On the contrary, the Works Department was as full of work as ever. He desired to draw special attention to the rise in the estimated cost per child. In 1894 it had been 15*l.*, while this year it was 30*l.* The statistic was one of some importance, for it was commonly used—in recent Parliamentary debates, for instance—to indicate the cost of building. The ordinary method was to multiply the number of children in the schools by the assumed average cost per "place." It was, therefore, worth while to examine carefully how the statistic was worked out if it was to be used as a comparative test of the cost of construction. But it was not to be supposed that the whole of the cost was incurred in providing accommodation for children, as part of the money was spent on drainage, playgrounds, boundary walls, schoolkeepers' houses, and various other ways. Thus, in the year 1901, contracts were given for fifteen new schools and enlargements, amounting to 219,968*l.*; and as these schools were to provide accommodation for 7,997 children, the cost per child, including 10 per cent. for furniture and expenses of architect's department, was set down as 30*l.* But the expenditure of 219,968*l.* included, besides 153,218*l.* for school buildings, 7,032*l.* for centres, and 59,718*l.* for drainage, playgrounds, &c.; and though room in classrooms and halls for only 7,997 children was arranged for, the art and science rooms and gymnasia contained additional space for 1,340 children more, or 9,337 in all. Using the number of children thus modified to divide the cost of the building, 153,218*l.*, the corrected cost per "place" was 16*l.* 8*s.* 2*d.*, instead of 30*l.* The figures for individual schools showed that even in 1901 it was possible to construct a school at the rate of 13*l.* 14*s.* per "place," and in 1902 a contract was given for a school building at the rate of 12*l.* 14*s.* 8*d.* As long as rates of that kind were adhered to the London School Board could not be accused of building at an excessive cost, in comparison with the expenditure incurred in adjacent districts.

BLACKLEY HOUSING SCHEME, LANCASHIRE.—The Sanitary Committee of the City Council have prepared a report on the new proposals they make with regard to the Blackley housing scheme. In April, 1901, they were directed by the Council to formulate a scheme for building 203 houses on the Blackley estate of the Corporation, and to borrow 60,000*l.* for this purpose. They prepared a scheme with plans, and a good deal of correspondence and some interviews afterwards took place with the Local Government Board. It was found that the cost of the houses under the proposed scheme would be heavy, and the matter was deferred until after the appointment of Mr. H. Price as architect to the Corporation, who then prepared plans and afterwards revised them with a view of reducing the cost of the houses. A description of the revised plans is given in the report of the Committee, and it is stated that the Housing Sub-Committee have approved them. It is also stated that the laying out of the necessary roads on the estate is proceeding. The Housing Sub-committee have recommended that application should be made to the Local Government Board for sanction to borrow 10,000*l.* for making these roads, and their recommendations have been approved by the Sanitary Committee.—*Manchester Guardian.*

EDINBURGH BUILDING TRADES EXCHANGE.—At a meeting of the Building Trades Exchange, Ltd., held on the 29th ult., in the rooms, 26, George-street, Edinburgh—Mr. James Miller presiding—Mr. James Moscrip, architect, lectured on the housing question in large cities. It was not always the poorest who inhabited slum areas. He had in his own experience in Edinburgh found families with a combined income of from 2*l.* to 5*l.* per week living under the most wretched conditions in the centre of slums. There were, of course, many others who were really poor, but who yet managed to keep a comparatively comfortable and clean house. There was a class of people whom it was almost impossible to house satisfactorily. Some people, if placed amid good surroundings, would not keep them in a good condition for more than a week or two. In these circumstances, they ought to have some sympathy with the Corporation of Edinburgh in putting up houses which some ratepayers had condemned as byres; he alluded to the so-called model tenements, where the inside work was a disgrace. It was probable that the Corporation had in view the class of people whom they had unhoused, and whom they were compelled to house again, and who were not fit to live in properly-equipped dwelling-houses. Discussing the remedy for the problem, he said he did not believe in the taxation of land values; he did not believe in taxing any commodity which was an absolute necessity for the community. Facilities for travelling to the areas outside of the city were all very well, but if such facilities were given, the result would be to raise the price of the land in such areas. Mr. Moscrip's suggestion was not to nationalise the land, but to municipalise it. He would have the municipa

authorities, as opportunity occurred, acquire land in the outlying districts, paying for it, not the owners' price, but the fair market value based on the rental at the time of purchase. The Corporation, becoming thus the superiors, would be able to feu the land to builders at reasonable rates. One result of that system would be that the streets in those areas could be properly laid out in squares, crescents, and terraces, as had been done in the new town of Edinburgh. The beautiful arrangement of the streets in the new town of Edinburgh was due to the foresight of George Heriot and his governors who, after George Heriot's death, acquired a huge area on which the new town was built. The Chairman said he would like the municipal authorities who built houses to show exactly how much they cost per cubic foot. Mr. Paterson said the Heriot Trust had been referred to. That Trust took the highest price for their ground they could get, just as other people did. With regard to the housing of the poor, he thought they did too much for loafers. Mr. Drysdale said that the Heriot Trust were the greatest sinners in regard to the laying out of narrow streets and high buildings, and he quoted Albert-street as an example. He did not know that they could hope to elevate a man by putting him into a bare, ugly dwelling. They need not give a very fine place, but they might, at least, give a 9-ft. ceiling, plenty of floor space, and decent walls. As to house farming, the municipalities were themselves the chief sinners, as they farmed out their houses.

THE LONDON BUILDING ACT (AMENDMENT) BILL.—The various wards of the City of London are organising a strenuous opposition to the London Building Act (Amendment) Bill, which will be introduced into Parliament next Session. It is not disputed that the calamitous fire in Queen Victoria-street last year, when ten lives were lost, may call for some alterations in buildings with a view to ensuring, if possible, the saving of life; but the proposals now made by the London County Council are regarded as arbitrary. The commercial interests of manufacturers and other persons owning or occupying property in the County of London will, it is said, be so seriously affected that it has been decided to ask the Lord Mayor to call a meeting of the citizens at the Guildhall in order that the withdrawal of the Bill may be obtained.

THE COOPER HEWITT LAMP.—The British Westinghouse Co. gave recently an exhibition of this novel mercury vapour electric lamp. It consists simply of a vacuum tube containing mercury in a bulb at one end. The lengths of those exhibited were about 3 ft. or 4 ft. long, and 1 in. in diameter. A special starting switch was used, and the lamps could be run off any pressure of supply between 50 volts and 500 volts. When measured photometrically in the ordinary manner, the efficiency of these lamps comes out very high, but the light they give out is not pleasant. Examined with the spectroscope, it is seen that it consists of yellow, green, and a few violet rays, the red and the blue being almost entirely absent. All colour values are altered and people's hands and faces appear to have dark patches on them. The inventor has tried to remedy this by using red fluorescent silk which glows when the light falls on it. Although the silk appears red, yet the fluorescent rays given out are not sufficient to alter the general nature of the illumination. It was stated that the absence of red rays might be an advantage in a drawing office as the light was more restful for the eyes. In our opinion, a more practical application of the principle of this lamp was shown in the Cooper Hewitt static convertor which was exhibited at the same time. By means of this convertor direct current can be got from three phase mains, and when this system of supply is in more general use, many applications will doubtless be made of it.

INTERNATIONAL FIRE EXHIBITION: CONTINENTAL SECTION.—A meeting, attended by experts in fire prevention and fire brigade work from all parts of Germany, was held on Monday at Berlin, to decide as to the part to be taken by Germany in the impending International Fire Exhibition. Chief Officer Westphalen, of Hamburg, presided, and was supported by the Chief Officers of Berlin, Bremen, and other cities, as also by Privy Councillor Stübben, President of the Amalgamated Architectural and Engineering Societies; Councillor von Trevendt, of the Building Police, and a number of manufacturers. It was decided that the Ducal Hall of the Earl's Court Exhibition should be devoted entirely to the German section of fire appliances and fireproofing materials, and a number of firms immediately resolved to exhibit extensively. The chairmanship of the Fire Brigade Section of the German Group will be occupied by Chief Officer Westphalen, and that of the Building Department by Privy Councillor Stübben. There will also be an important German loan section of German works of art, engravings, and fire relics, particularly relating to the great Hamburg fire of 1842.

FIRES IN OILSHOPS.—At the meeting of the County Council on Tuesday, the Building Act Committee reported as follows:—"The Fire Brigade Committee reported to the Council on November 19, 1901, that the risks to life arising from fire in oilshops were, in their opinion, so great that they thought, having regard to the experience of the past, that the time had arrived when, in the interest of the public, the use as living-rooms or workshops of rooms above or directly communicating with oilshops should not be permitted without (1) adequate safeguards to prevent the spread of fire from the oilshop to other parts of the premises; and (2) provision of means of ready escape from such premises. The Fire Brigade Committee further stated that they had communicated this opinion to the Building Act Committee, and had asked that Committee to consider the desirableness of recommending the Council to seek statutory authority to enable effect to be given to the suggestion. Similar suggestions have at different times been made by some of the Metropolitan Borough Councils, and we think it desirable to indicate briefly the action taken by us on this matter, in connexion with the Bill which is being promoted by the Council in the next Session of Parliament to amend the London Building Act. While this Bill was in preparation we gave careful consideration to the necessity of providing means of escape in case of fire from premises used in part for purposes of trade or manufacture and in part as dwelling-houses. Section 74 of the London Building Act, 1894, deals with this question so far as relates to new premises exceeding ten squares in area, and it appeared to us that by amending the provisions of this section, the suggestions of the Fire Brigade Committee would be met, not only as regards all new oil-shops, but also as regards all other kinds of new shops, where the premises, of which the shop forms part, exceed ten squares in area. To extend the application of the Section to existing shops generally would, in our opinion, result in a greater disturbance and injury to trade than the danger from fire seems to justify, but the practicability of extending it to existing oil-shops engaged our earnest attention. The statistics, which we were able to obtain from the annual reports of the Chief Officer of the Fire Brigade as to the number of fires, and from the Post Office Directory as to the number of the various kinds of shops, &c., did not, however, in our opinion, afford sufficient ground for taking such a course. For instance, it was found that the percentage of fires, calculated on the average for the six years 1896-1901, was in oilshops, 3·28; in public houses, 2·48; and in drapers' shops, 2·18. As regards the danger from fire in oilshops, it has to be remembered that the special risks which tend to make the danger greater than in other shops can probably be dealt with in the most reasonable and effective manner by the introduction of legislation to give adequate powers of controlling and regulating the storage of inflammable liquids and substances, and we understand that the Public Control Committee are reporting as to the action that it is desirable to take in this direction."

LEGAL.

ALLEGED INJURY TO BUILDINGS BY TUNNELLING OPERATIONS — IMPORTANT CASE.

THE case of Dawson *v.* the Great Northern and City Railway Company came before Mr. Justice Ridley and a special jury on the 29th ult., an action brought by the plaintiff, Mrs. Dawson, a widow, carrying on business as a draper in the City-road and East-road, to recover damages from the defendants for injuries to her premises alleged to be caused by the underground tunnelling for the purposes of the construction of a railway by the company. The defence was a denial that the injuries were due to the operations of the company.

Sir Edward Clarke, K.C., Mr. Harry Dobb, and Mr. R. J. White appeared for the plaintiff; and Mr. McCall, K.C., Mr. Geo. Cave, Mr. Hutchinson, and Mr. W. P. Horton for the defendants.

In this case certain members of the jury had had a view of the premises under the order of the Court.

Sir Edward Clarke, in opening the plaintiff's case, said that at the end of 1900 his client contemplated rebuilding a block of buildings which belonged to her in the City-road and East-road, of which she was formerly the leaseholder, but of which she subsequently became the freeholder at the price of 10,000*l*. At the same time she was the leaseholder of adjoining property, which was necessary for the business she carried on, and in regard to the rebuilding she called in a Mr. Mitchell to thoroughly survey the property. The survey commenced in November, 1900, at which time there was no structural damage whatever, but in April, 1901, cracks made their appearance in the walls, which indicated that they were the result of something going on underground. Thereupon a letter was written to the defendants, calling their attention to this, and asking if the company had acquired from any one, and, if so, from whom, the right to do any work under the premises. To that the company replied that they would follow their usual course of reinstating the premises to which they caused injury. The correspondence continued, and a careful watch was kept on the premises by the architect and surveyor, whose duty it was to consider the matter, and from that time down to the present the mischief to the premises had been an advancing and increasing one. One extraordinary thing which happened at this time was that, owing to the subsidence of the ground, one of the pillars, instead of supporting the girder, was actually being supported and held up by the girder. Interviews took place between the representatives of the company and the plaintiff as to the temporary means to be adopted to secure the premises, and those members of the jury who had viewed the premises would understand what was done to avert a serious danger. Subsequently the company were requested to send in a schedule of the work they were prepared to do, and the recommendation of the company was that the cracks should be cut out and the brickwork bonded in. Afterwards the company sent in a schedule, and one was also sent to the company by the plaintiff's architects and surveyors, but no agreement was come to with regard to either of the schedules of the work necessary to be done. On the part of the company, it was suggested that the company had only taken an easement of the land and not the land itself.

His Lordship said he thought it had been held that in constructing a tunnel the persons constructing took the land.

Mr. McCall said that the special Act of the Company specified that the construction of a tunnel would not be taking the land within the meaning of the Lands Clauses Act.

His Lordship said he gathered from the opening that the real point was that of structural damage and how much it would cost to make it good.

Mr. McCall said that might be one question, but there were a great many others in the case.

His Lordship: But that is the only one for the jury.

Mr. McCall: The first question is whether the tunnelling was the cause of the damage to the premises.

His Lordship: If it was not then you would not be liable.

Sir Edward Clarke, continuing, said that several most experienced architects and surveyors had examined the premises and prepared specifications of the work necessary to be done. The quantities had been taken out and submitted to Messrs. Patman & Fotheringham, builders, and their estimate of the cost of repairing the damage was 3,957*l*. The learned counsel submitted that the plaintiff was entitled to that sum, and, in addition, to compensation for the loss she had sustained in carrying on a large business, the turnover of which during the last twelve months was 86,000*l*.

Mr. Chas. Robt. Mitchell, of the firm of Mitchell & Raine, architects and surveyors, examined, said that in November, 1900, he first inspected the plaintiff's premises, with a view to certain building operations. At that time there were no structural damages, but in April, 1901, he noticed cracks in the party walls, and these increased as time went on. In one case the bottom of a pillar was fractured by a subsidence of the ground, and as it remained hanging by the girder it had to be shored up. At interviews he had with the Company's representatives the Company proposed certain work, consisting mainly of cutting out the cracks and bonding in the brickwork, but not including underpinning. On behalf of the plaintiff he was unable to accept that as adequate. He had made out a schedule of the work absolutely necessary, and that had been sent to the Company, but they would not agree to it. He believed that as the work was opened up further injury would be found, including damage to the foundation of the walls. A sum of 200*l*. for contingencies was included in the estimate of the cost of the work. To do the repairs in sections, so as to cause as little inconvenience to the business as possible, would take nine months, but if the business was suspended it would take three months.

In cross-examination witness said he had no intimation of what had taken place in the way of alterations before he saw the premises in November, 1900. The premises appeared about forty years old. The foundations were of the usual and ordinary description. When he saw the crack on April 19, 1901, it was an absolutely new one, and was on the third floor in one of the dormitories. He certainly suggested that the crack was caused by the tunnelling operations of the defendant company. He was as certain of that as he was that the subsequent cracks and damage were caused by the work. Not being an engineer he could not say that tunnelling with a shield and efficient "grouting" would prevent subsidence of the land above. If the tunnelling under the wall where he saw the crack was not done until the September following, he would not like to say that the tunnelling caused it, but he could say that the cracks developed as the tunnelling was proceeded with. The greatest amount of damage was undoubtedly done after September, 1901. He was aware that the main sewer near the plaintiff's premises was remade in 1899, but he could not say whether it was, or was not, made by means of shafts and tunnels. The sewer was laid in the water-bearing strata above the blue clay, according to the section plan produced. He had not paid any particular attention to the sewer being a probable cause of the subsidence of the plaintiff's property.

The witness, re-examined by Sir Edward Clarke on the 30th ult., said that none of the injuries to the premises was due to any previous alterations or insufficiency of the foundations. When he went over the premises with the jury he found an entirely new crack which he was certain he must

have seen when he examined the property shortly before if it had been there then. That indicated that some movement was still going on, but the extent to which it might go he could not predict.

In answer to a member of the jury, the witness said if there were movement in the walls the woodwork and skirting would show signs of it to some extent, and as a matter of fact it showed here that in one room the skirting had moved at least half an inch.

By Mr. McCall: He had paid little attention to the skirting, but as he had said, it had been drawn in one case about half an inch. So far as he knew that was the only case. But it must be remembered that the skirting was bound by the floor, and the wall was not so bound.

Mr. Wm. Woodward, an architect and surveyor, examined, said he was consulted by the plaintiff with regard to her premises in the City-road and East-road, and inspected the property, being supplied with a copy of the specification of the work Mr. Douglas Young proposed to do on behalf of the Company. He considered the Company's proposal was utterly inadequate, and that the tender of Messrs. Patman & Fotheringham was not an extravagant one for the work necessary to be done. He agreed with Mr. Mitchell as to the cause of and the amount of injury done to the premises.

Cross-examined.

He first examined the premises in the company of Mr. Mitchell. He generally agreed with Mr. Mitchell and disagreed with Mr. Douglas Young as to the extent of the injuries to the premises. He did not examine the skirting for any movement, because there would only be movement of the skirting if it had been so attached as to substantially form part of the wall.

Mr. Pilditch, an architect and surveyor, gave similar evidence.

Mr. George Frederick Deacon, a civil engineer, examined, said that from 1871 to 1880 he was Engineer to the Liverpool Corporation, and was responsible for the construction of the works necessary to bring to Liverpool the supply of water from Wales. He also constructed the Liverpool main drainage, and had had considerable experience of the effect upon buildings from tunnelling. During the last four years he had constantly observed and inspected the working of tube railways and the results upon buildings that had followed their construction. The construction of the defendants' railway had been executed by the head shield. The carrying of a tunnel through the London clay did in many cases produce mischief to buildings above it. Subsidence was always produced, though visible mischief might not follow. He had examined the plaintiff's premises, and his opinion was that the injuries were due to subsidence, caused by the company's operations, and were not affected by the reconstruction of the main sewer in 1899.

Cross-examined, the witness said that whatever had happened to the plaintiff's premises, he attributed it to the railway. Unless the sewer was water-logged, it would have been impossible for it to have had any effect upon the subsidence of the buildings; and, as a matter of fact, it was not water-logged.

His Lordship: Do the defendants rely upon the sewer in this case?

Mr. McCall: Yes, upon the way it was constructed.

Mr. H. H. Collins, architect and surveyor, and dangerous structure surveyor to the Corporation of London, said he had examined the premises, and considered that a portion was so dangerous that the plaintiff was to blame in allowing customers to go in until precautions were taken to prevent an accident. His opinion was that great damage could be and was caused by the construction of tube railways. He considered that the damage to the premises was due to the construction of the railway and to no other cause.

Cross-examined: He could not say when subsidence would commence, as it might take place any time from twelve hours to twelve months, or even longer.

Mr. Jas. Rush Dixon, Surveyor to the Borough of Shoreditch, explained the making of the sewer passing the plaintiff's premises in 1889, and stated that the soil in which it was carried was perfectly dry. Nothing was done that could possibly cause the subsidence of the plaintiff's premises.

The witness then proved that defendants' operations in the neighbourhood of the plaintiff's premises had injured certain drains and the pavement, and the Company paid for the repairs. Along the line of the railway there had been disturbances, and the Company had from time to time paid for the repairs.

In cross-examination, the witness said the remaking of the sewer was by the workmen in the employ of the local body, and was efficiently done. One of the shafts to enable the men to do the work was opposite the plaintiff's premises, and the precaution was taken of timbering and strutting all excavations in the course of the work.

At this stage the hearing of the case was adjourned till the 4th inst.

On the 4th inst., at the sitting of the Court, Mr. McCall said he admitted the liability of the defendants, but in view of the serious questions raised by the case, and the difficulty of dealing with details of the structural alterations which were considered necessary by the plaintiff's advisers, he suggested that the proper and reasonable way to deal with the matter was for the amount of compensation to be dealt with by a special referee, whose report should be considered by the Judge at a future date. There was a serious conflict of evidence with regard to the work which was necessary to be done in pulling down walls and underpinning, and a surveyor on the spot could at once decide on questions with which it would be difficult for the jury to deal merely on the evidence of experts. The trade claim must depend upon the amount of repair necessary, the way in which that repair was carried out, and the time the work would occupy. He suggested that his Lordship had power to say that this was a case which should be investigated by a special referee on the spot, who should deal with the question of compensation, reserving the other questions to be dealt with by the Court.

Sir Edward Clarke said that Mr. McCall should have taken up his present position earlier in the proceedings, as the case had involved the plaintiff in enormous expense. He submitted that his lordship had no power to withdraw the case from the jury now. There was, again, the question of damage to the business, and a surveyor had no special knowledge of that.

His lordship said he did not think the case came within the Arbitration Act. However, it was too late now to make the order Mr. McCall asked for. They must proceed with the case. The jury had seen the premises, and he considered they were competent to decide whether it was necessary to cut out the cracks or pull down the walls and build them up again. He would make a note that Mr. McCall had admitted liability, and they would proceed with the question of the amount of damages.

The plaintiff's case was then continued, and further evidence given as to the damage caused to the plaintiff's buildings by the subsidence of the land through the defendant's tunnelling operations.

Mr. Henry Branch, a quantity surveyor, examined, said he had made an examination of the premises, and had taken out specifications and quantities with a view to repairs. He was of opinion that the cracked walls should be pulled, or partially pulled down, underpinned, and rebuilt. The work would cost 3,711*l.*

Cross-examined:

He had no idea what would be the cost of merely cutting out the cracks and rebuilding the walls.

The following gentlemen also gave evidence in support of the plaintiff's case:—Mr. Harry Lovegrove, an architect and surveyor, and the District Surveyor for the Boroughs of Shoreditch and Islington; Mr. Frank Hollis, a quantity surveyor, of Bedford-row, W.C.; and Mr. G. R. Mortimer, estimating surveyor to Messrs. Patman & Fotheringham, builders. This gentleman put the cost of repairs alone at 3,957*l.* Mr. B. Thompson, in the employ of Messrs. Trollope, builders, estimated the repairs at the sum of 4,090*l.*

Mr. Edwin Howell, an accountant, examined, said he estimated that by reason of the interruption of trade by the reconstruction of the plaintiff's premises there would be a loss of trade equal to three months' trading, and a loss of profit of over 4,000*l.*, besides that it would be necessary to provide sleeping accommodation for the staff, whose bedrooms had been shattered. The kitchen would also have to be demolished, and the feeding would also have to be done outside. If the business were completely stopped for three months the goodwill would be lost and the business ruined.

Mr. Richard Cross estimated the loss of net profit at 3,208*l.*, and damage to the stock by dust and dirt of the building operations at 1,500*l.* The additional cost of sleeping and feeding the staff would be about 1,000*l.*

The case was proceeding when we went to press.

POINT UNDER A REPAIRING COVENANT IN A LEASE.

MR. JUSTICE KEKEWICH, on the 30th ult., concluded the hearing of the case of Wright *v.* Lawson, an action by the plaintiff, the lessor, under a lease dated February 24, 1888, of a house and shop situate in King's-road, Fulham, against the defendant, the lessee asking that the defendant might be ordered to restore the premises to the condition in which they were when the lease was granted by replacing a bay window which had been removed. It appeared that the lease contained a covenant by the lessee that he would during the term of the lease, as often as occasion should require, to the satisfaction of the lessor or her surveyor, "substantially and effectually repair, uphold, maintain, drain, paint, whitewash, and cleanse the premises for the time being held under this demise." On June 30, 1900, defendant was served with a notice by the London County Council, under the provisions of the London Building Acts, 1894 and 1898, to take down or secure the brickwork of the external walls and bay window (which was on the first floor), so far as it was cracked, bulged, loose, sunk, overhanging, out of the upright, or otherwise defective. The notice also called upon the defendant to shore up the bay window and arch over the back door. The defendant instructed a builder to comply with the notice, and the window was taken down. As the house was old, it was found impossible to re-erect the window as it was before without its being condemned as dangerous by the Council, so defendant built a new window set back in the main wall of the house.

Evidence was called to prove that to satisfy the requirements of the Council a new bay window could only be erected by supporting it by two columns from the ground.

In the result his lordship held that erecting a new bay window supported by columns could not be regarded as the repair of the old bay window, and that defendant was not liable. He accordingly entered judgment for the defendant with costs.

Mr. Stewart Smith, K.C., and Mr. P. Wheeler appeared for the plaintiff; and Mr. Warrington, K.C., and Mr. Eustace Smith for the defendant.

SHOREDITCH ANCIENT LIGHT DISPUTE.

THE case of Leage & Hardy *v.* The Citizens' Property Co., Ltd., came before Mr. Justice Kekewich in the Chancery Division on the 3rd and 4th inst.

In this case the plaintiffs, Richard William Leage and Hester Susan Leage, were the owners in fee simple of premises known as No. 43, Westmorland-place, in the Parish of St. Leonard, Shoreditch, and of a yard and certain buildings used as a cabinet-maker's workshop and a French polisher's workshop situate in the rear thereof, subject to a lease dated June 9, 1895, whereby the premises were demised to the other plaintiff, George Hardy, for the term of twenty-one years from June 24, 1895. The plaintiffs claimed an injunction to restrain the defendants, their agents, workmen, and servants, from erecting or permitting to remain any building or erection on the north side of Nile-street and the east side of Underwood-street in such manner as to darken, injure, or obstruct any of the ancient lights of the plaintiffs' workshops and premises as the same were enjoyed previously to the taking-down of the ancient buildings which previously stood on the defendants' premises.

It appeared that the cabinet-maker's workshop was situated at the northern end of the plaintiffs' premises, and the rooms on the ground floor were lighted by five windows looking south, and the rooms on the first floor were lighted by five windows looking south and also by three skylights in the roof of the building. The total height of the building from the level of the yard to the eaves was about 18 ft., and the total height of the building to the top of the roof was about 26 ft. The French polisher's workshop was the upper floor of a building standing on the west side of the plaintiffs' premises, and was a narrow building partly lighted by windows looking east and partly by three skylights in the roof of the building. The height of the last-mentioned building from the yard level to the eaves was about 16 ft., and the total height of the building to the top of the roof about 20 ft. The plaintiffs alleged that for more than twenty years immediately prior to the commencement of the action the full and free access and use of light to and for the cabinet-maker's workshop and French polisher's workshop through the windows and skylights in the same had been actually enjoyed with the said buildings by the plaintiffs and their predecessors in title without interruption over certain other premises in Nile-street and Underwood-street lying immediately adjacent to and on the west or south-west of the plaintiffs' premises. Such adjacent premises were during the whole of the period in part unbuilt on, and in part occupied by old low buildings, which were not at any point more than 25 ft. high from the level of the yard. In July, 1902, the defendants pulled down the old buildings situated on the adjacent premises in Nile-street and Underwood-street, and commenced to erect new buildings on the premises. The plaintiffs alleged that such new buildings were situated much nearer to the cabinet-maker's workshop and French polisher's workshop than any of the old buildings so pulled down, and defendants threatened, unless restrained, to erect their new buildings to a height of 54 ft. or thereabouts from the level of the yard. The plaintiffs' case was that, if the defendants' buildings were erected to the intended height and in the position mentioned, it would seriously interfere with the access of light to the windows and skylights mentioned. The main defence was a denial that there had been, or would be, any substantial or material interference with the plaintiffs' light.

Before action the defendants' building had only been raised just above the level of the old building, but the defendants continued the erection of the building with the knowledge of the plaintiffs, who agreed that defendants should continue building up to a certain point, so as not to exceed the 45 deg. angle, but without any agreement that that angle would be accepted by the plaintiffs. The defendants then continued the erection of their building up to a height of 48 ft.

Mr. P. Ogden Lawrance, K.C., and Mr. Alfred Adams appeared for the plaintiffs, and Mr. Warrington, K.C., and Mr. Waggott for the defendants.

The expert witnesses called on behalf of the plaintiffs were Mr. W. Seth Payne and Professor R. Elsey Smith. The defendants called Messrs. Fox, Matthews, and Runtz.

After hearing the evidence and the addresses of counsel his Lordship, in giving judgment, said that in cases like this which involved questions of fact the Court had to consider the evidence very carefully. As the Judge he had to form the conclusions for himself. He recollected a case in which he inspected the building the light of which was said to be obstructed, and whilst in the rooms he could see no interference with the light until he sat in a chair in front of the window, when he found a very marked shadow was thrown right across the desk. To his mind the evidence of real experience was always more valuable, and he placed more dependence upon it than the evidence of theory by experts. He thought there had been some interference with the light in the present case. The experts for the defendants all admitted that there had been interference with the light, but they said there was abundant light for the plaintiffs' premises. His Lordship had nothing whatever to do with that. The plaintiffs said the light had been interfered with from a particular quarter, and that was admitted. It might be that that quarter was not the most valuable quarter, but it was valuable for the purposes of light at certain particular hours of the day. In this case there could be no doubt that if the light coming from the south-west was interfered with, that would cause serious injury to the plaintiffs, and they were entitled to be protected. As to the workshop, no doubt some of the witnesses had exaggerated the loss of light, but he looked upon every one of them as honest men coming to support the view of the plaintiffs, and with no intention to say anything but what was straightforward and true. They gave him distinct evidence as to the interference with the light there. In the French polisher's shop he was told that the fine work which had to be done there was interfered with, and that, by reason of the defendants' building, the workmen lost a large part of the light on winter afternoons. The result was that the plaintiffs had cause to complain of the defendants' buildings as they stood, and if they were allowed to go up 8 ft. higher, that would speak for itself. There must be an injunction to restrain any further raising of the building. When the writ was issued there was no interference at all, or very little, and he thought, on the balance of evidence, that as the building had been raised then it was just above the level of the old building, but the erection of the building had been continued. It had been continued without the slightest blame to the defendants. They went on with the cognisance of the plaintiffs' architect, who was agreeing that they should continue up to a certain point so as not to exceed an angle of 45 deg., but without any agreement that it should be accepted. The defendants worked on at their own risk. It was not suggested that there had been any breach of faith on either side. The defendants chose to do what they thought was most convenient for themselves, and they must take the consequences. He thought there must be an injunction as regarded the future, and a mandatory injunction as regarded what was up. He was afraid he could not avoid leaving it open on the order what would or would not interfere so as to be a material interference with the plaintiffs' light. The injunction must go in the ordinary form, and the question of what was interference must, if occasion should arise, be determined by that unfortunate proceeding, a motion for committal.

After some discussion it was arranged that there should be no motion for committal before Trinity sittings.

Mr. Lawrance assured Mr. Warrington that he would find the plaintiffs very reasonable in the matter. They were in the hands of very competent experts.

PATENTS OF THE WEEK.

APPLICATIONS PUBLISHED.*

1,721 of 1902.—J. PARKER: *Domestic Fire Grates and Cooking Ranges.*

A fireplace formed by the combination of a fixed block with shelves for an iron grid or grate to rest on; a transverse front slab or brick, a portable fire brick or bricks resting on the grid, and a hot-air chamber formed below the grid.

2,106 of 1902.—E. BOSWORTH: *Chimney and Ventilating Cowls.*

This consists in the combination with a chimney cowl of a ball race adapted so as to enable the bonnet to rotate freely about the cowl.

778 of 1902.—M. LEE ROSS: *Burner.*

A burner for gas stoves and the like, in which the top part of the mixing chamber is insulated from the main body or lower part thereof, and is provided with an upwardly protruding cone.

2,226 of 1902.—J. BOWLER: *Fire Bricks and Fire Lumps.*

This consists in the use of dust-destructor or other furnace refuse mixed with Stourbridge clay for making fire bricks and fire lumps.

2,605 of 1902.—O. C. BURDEN and T. F. ADAMS: *Latch Locks.*

A latch, characterised by a slotted axially turning cylinder, which carries a key actuated tumbler and is located at a right angle to the bolt, and a finger connecting said cylinder and bolt together.

9,322 of 1902.—H. H. LAKE (F. J. Warren): *Manufacture of Coal Tar Compositions and Pitches.*

This invention relates to coal tar and its products, such as paving compositions, pitches, and the like, for use in roofing, paving water-proofing, insulating, or for any other purpose for which coal tar or its products may be used. The invention is based on the discovery that a tar or pitch that consists of nearly pure bitumen is more subject to changes of temperature than one which is relatively an impure bitumen, that is, it will flow easier when warm and will be more brittle when cold than a tar or pitch which is not pure. This property of not being easily affected by extremes of temperature is especially desirable for use for roofing purposes, and for similar purposes when the tar composition is subjected to the action of the elements. It has been discovered that a tar which contains more than 20 per cent. to 25 per cent. of lamp black when used for making roofing felt, will not saturate the dry felt well, and will leave a sticky surface, which causes wastage of the manufactured product, owing to the different layers of felt in the rolls adhering to each other, and on account of not saturating the felt thoroughly, makes an inferior roofing paper, and one which is expensive to make. By mixing with this tar one which will reduce the impurities below the limit given the tar will saturate the paper thoroughly, leaving a comparatively non-adhesive surface, and making the felt weigh more than if the saturation was not thorough. It has also been found that if roofing pitch be made containing 35 per cent. to 40 per cent. of lamp black its adaptability and life is greatly increased. Paving composition may contain as high as 50 per cent. of these impurities and greatly increase the value of the composition from which it was made. An insulating composition may contain from 40 per cent. to 60 per cent. of lamp black. The invention contemplates the addition of this finely divided inert matter to tars or compositions, either during the manufacture of the crude tar, to the crude tar itself, or to the products of the tar during or after their manufacture. This may be accomplished in several ways: the amount of lamp black which may form during production of the tar may be regulated by varying the shape of the retort, or by varying the methods of making the gas, or the heat at which the retorts are held during its manufacture without materially affecting the other products of distillation. It may be introduced into the crude tar in bulk, and effecting a mixture by means of agitation, or it may be introduced by carbonising oil, and forcing the lamp black laden air resulting therefrom into a mass of tar or composition, the lamp black mixing with the tar, during its passage through it.

2,996 of 1902.—D. J. G. MILLER: *Door-closing Device.*

This consists in combination, a door-closing spring controlling a swinging cylinder by means of a lever and crank, a check spring, and a piston and rod within the cylinder, the piston being arranged to compress the check spring when the door is closing; a knuckle joint, formed by said piston-rod and a rod connected with the door, and means for stiffening or strengthening said knuckle, forming a door-closing device.

3,917 of 1902.—F. B. YOUNG: *Kitchen Ranges and other Fire Grates.*

A kitchen range or other fire-grate having an adjustable front made in portions jointed together; said portions being guided in their movements by means of guide grooves or slots or the equivalent thereof.

3,851 of 1902.—T. KIRKLAND: *Radiators for Heating and Cooling.*

This invention relates to heating and cooling apparatus of the kind known as swinging radiators, which are pivotally supported or hinged at one end, so as to be capable of swinging in a horizontal or other plane, and the said invention has for its object to increase the efficiency of such apparatus, and prevent or reduce the liability of leakage of the heating or cooling circulating fluid at the pivotted joints. According to the said invention, one end of the radiator is hinged at the upper and lower parts thereof to a wall, bracket, or other support, by means of pivots or elbow-joint connexions. The upper connexion serves merely as a hinge to carry the weight of the radiator, whereas the lower one serves both as a hinge and also as the inlet and outlet for the circulating fluid. To this end the lower connexion has suitable ports and passages formed in it. These ports may be arranged to be opened more or less by the movement of the radiator, so that the circulation—and therefore heating effects of the radiator—can be controlled, or even cut off completely, by turning the latter into different positions.

3,964 of 1902.—W. FRADLEY: *Cisterns, or Tanks and Taps connected therewith, for Flushing Water-closets and the like.*

A flushing apparatus, consisting of a cistern or tank, a water-supply valve in the tank, a weighted lever adapted to open or close the valve, a float mounted on an arm inside the tank and arranged to support the lever in the open position during the filling o the tank, but when the tank is full to liberate the lever to close the supply-valve, and an operating lever adapted to raise the dome for flushing the tank, and also to raise the valve lever on to its supporting arm.

4,381 of 1902.—W. PEARSON: *Chimney Cowls.*

A chimney cowl having two or more superposed cone frusta, each composed of a series of concavo-convex plates, and arranged with air spaces between the upper end of one frustum and the lower end of the superposed frustum, and with diametrically opposite spaces between the concavo-convex plates.

4,643 of 1902.—F. W. BRAND: *Tables, Desks, Cabinets, and the Like.*

This invention relates to tables, desks, cabinets, and the like of the kind wherein folding flaps or leaves form the top and in which a movable platform automatically rises and takes the place of the flaps when they are turned outwards to extend the table or the like. It consists in the use of a number of inclined grooves or slots for guiding the rising and falling platform in combination with studs on the edges of the said platform which ride in the said inclined grooves or slots.

4,713 of 1902.—C. PEGRAM: *Roof Tiling.*

This consists in the combination with tiles having wedge-like keys, or ribs, of laths having edges made to correspond therewith.

5,354 of 1902.—P. GIOLITTI, C. BONATI, and R. GATTONI: *Extensible Tables.*

A table composed of four separate sections, each capable of sliding radially on the table frame, in combination with three folded sleeves hinged on such frame in the same horizontal plane, and in the positions to fill the spaces between the sections when extended and when the leaves are turned on their hinges and opened out, one leaf being long enough to fill the space from the centre to the outer edges of the extended table in one direction and the other two each long enough to respectively fill one of the spaces between the first extension leaf and the edge of the extended table in the opposite direction.

8,435 of 1902.—M. J. ADAMS: *Syphons and Syphonic Apparatus.*

One of the chief objects of this invention is to cause syphons or syphonic apparatus to operate in sequence. With this view it is preferred to arrange that the discharge from one or more syphons shall deliver liquid to one or more syphons through or by suitable connexions of a series. That syphon which had not its trap filled will start first. By means of suitable pipes or connexions it is arranged to refill traps or syphons, and the latter may be placed in one tank or in any number of tanks.

18,670 of 1902.—J. W. CZERMAK and J. TISCHLER: *Latches.*

A latch-releasing device comprising, in combination, a door-frame, a door, keepers secured to the lintel and the threshold of said frame, bell cranks, pivotted near the top and bottom of the door and provided with a shoulder adapted to automatically engage the keepers, a spring, adapted to hold said bell cranks in operative position, a shaft, formed in sections connected to each other and to one arm of the bell crank for movement in a plane at right angles to the plane of the door, the end sections being telescopic and slidably mounted in sleeves and means for operating the shaft from a single point.

18,897 of 1902.—I. FRANKEN: *A Collapsible Protecting Device for Closet Seats.*

A collapsible protecting device for use with water-closet seats, consisting of a number of telescopically connected segments, so arranged that when desired the device can be opened out so as to fit on the closet seat, or closed up into small compass for portability.

23,968 of 1902.—A. SCHULER: *Manufacture of Painted and Burnt Glass for Paving or other Mural and like Decorative Purposes.*

A process for manufacturing painted and burnt glass for mural decorations, paving, and other decorative purposes, consisting in taking glass after the colour has been fired in, and burning into the back thereof rough particles of suitable materials, such as sand, fragments of stone, plaster of Paris, glass, or the like, which readily adheres to the adhesive medium employed for securing the glass in position.

20,423 of 1902.—H. BROCKER: *Machine for the Manufacture of Artificial Stones, Tiles, and the Like.*

A machine for the production of figured artificial stones, tiles, or the like, which by means of a carriage moving backwards and forwards on the machine frame effects in a single working course, quite automatically, the filling of the mould carriage, the pushing of the material in the mould, the pressing in and compression of the material to be moulded, as well as the strewing and smoothing down of the colour on the surfaces of the stones, and likewise the subsequent ejection of the finished stone, the mould carriage moving under a filling-box, and being filled by the material, and when moving forwards carrying with it a slide which closes the bottom of the filling-box; the carriage after leaving the filling-box passing under a rapidly rotating pushing cylinder, and being carried towards

* All these applications are in the stage in which opposition to the grant of a Patent upon them can be made.

the pressing cylinder, the material being thus preliminarily pressed, whereupon the machine is reversed, the mould carriage passing under the pressing cylinder in the opposite direction, after which the machine is again reversed to pass the pressing cylinder once more, whereupon the surfaces of the stone are coloured by means of the colour-strewing device, and the colour smoothed by the smoother, the paving stone being finally ejected by means of the movable plate.

20,492 of 1902.—H. BIRKBECK (Mielck's Stone and Terra Cotta Co.): *Artificial Stone and Process for Making the Same.*

The process of making the artificial stone, which consists in intimately mixing sand, burnt magnesia, and a concentrated solution of magnesium chloride, tamping the mass into shape, and confining the thus compacted mass at all sides during the resulting slow reaction.

412 of 1902.—W. H. PATTON and W. H. KNOKE: *Kilns for Burning Bricks and the Like.*

A kiln, consisting of the structure having a base with opposite furnaces therein, which are separated from each other, said base being provided with a plurality of flues in communication with the furnaces, an outer wall rising from the base and connected to a crown or top arch, an inner wall concentric with the outer wall, and having a flue between the same and the latter, the said inner wall forming a burning chamber, and rising only partially the extent of the outer wall, and having a floor wall with opposite flue slots, the said burning chamber occupying the full interior portion of the kiln, and a stack rising from the centre of the said floor-wall of the burning-chamber, and extending upwardly through the crown or top arch, and provided with outlet openings solely at the lower end thereof above the plane of the said floor-wall, whereby the heat will be caused to pass upwardly over the inner wall in part, and downwardly through the burning-chamber, and exit at the bottom of the stack.

1,600 of 1902.—E. T. CLARKE: *Gauges or Appliances for Measuring the Thickness of Cast Iron Pipes and for Similar Purposes.*

This consists in the combination with a tubular or other pivotal supporting frame adapted to stand upon the article to be measured, or on a support adjacent thereto, and to project along the inner and outer surfaces of the same; of a measuring beam or lever adapted to give a direct and accurate indication of the thickness or other required dimensions.

MEETINGS.

FRIDAY, FEBRUARY 6.

Architectural Association.—Paper by Professor G. Baldwin Brown, M.A., entitled: "What is the Real Value of Greek Work to the Modern Artist?" 7.30 p.m.

Royal Institution.—Right Hon. Sir H. Maxwell, Bart., on "George Romney and his Works." 9 p.m.

Institution of Junior Engineers (at the Westminster Palace Hotel).—Mr. W. Garnet Wernham on "Calorimetry." 8 p.m.

Birmingham Architectural Association. — Paper by Mr. J. S. Gibson.

SATURDAY, FEBRUARY 7.

Sanitary Inspectors' Association.—Twentieth Annual Dinner, Venetian Chamber, Holborn Restaurant. 6.30 p.m.

The Craft School (137, Globe-road, Bethnal Green).—Miss C. E. Collet on "The Occupations of our Great Grandmothers." 8.30 p.m.

British Institute of Certified Carpenters.—Visit to the London-wall Estate Buildings. 3 p.m. After which the monthly meeting will be held in the Carpenters' Hall at 6 p.m.

MONDAY, FEBRUARY 9.

Surveyors' Institution.—Mr. William Woodward on "Some of the Difficulties which present themselves to the Architect and Surveyor practising in London." 8 p.m.

Bristol Society of Architects.—Mr. E. Guy Dawber on "The Buildings of the Cotswolds." 8 p.m.

Royal Philosophical Society of Glasgow (Architectural Section).—Mr. Alexander Fisher on "Enamelling and Silversmithing." 8 p.m.

Society of Arts (Cantor Lectures).—Mr. Julius Hübner on "Paper Manufacture."—II. 8 p.m.

TUESDAY, FEBRUARY 10.

Institution of Civil Engineers.—Mr. D. Carnegie on "The Manufacture and Efficiency of Armour-piercing Projectiles." 8 p.m.

WEDNESDAY, FEBRUARY 11.

Architectural Association Discussion Section.—Mr. G. Trotman on "Waltham Abbey." 7.30 p.m.

Sanitary Institute. — Discussion on "The Present Shortage of Water available for Supply," to be opened by Mr. W. Whitaker, B.A., F.R.S., F.G.S. The Chair will be taken at 8 p.m. by Sir Alexander Binnie, M.Inst.C.E.

Institute of Sanitary Engineers, Ltd.—Examination and Literary Committee, 4 p.m.; General Purposes and Finance Committee, 4 p.m.; Election Committee, 5.15 p.m. Mr. J. Freebairn Stow on "The Biological Treatment of Sewage: Some Facts and Figures compiled from Three Years' Practical Working of Bacteria Beds." 7 p.m.

Edinburgh Architectural Association. — Mr. J. A. Arnot on "The Treatment of Angle Sites," illustrated by limelight views. 8 p.m.

Dover Institute.—Paper by Mr. J. Bavington Jones entitled "Something about our Villages." 8 p.m.

Society of Arts.—Mr. B. W. Ginsburg, M.A., on "The Port of London." 8 p.m.

THURSDAY, FEBRUARY 12.

Architectural Association of Ireland.—Demonstration on "Iron Ore" at Works of Messrs. J. & C. McGloughlin, Great Brunswick-street, Dublin.

Leeds and Yorkshire Architectural Society.—Annual Dinner, Queen's Hotel. 7 p.m.

Manchester Society of Architects. — Paper by Mr. Hugh Stannus.

Institution of Electrical Engineers.—If the adjourned discussion on the "Metric System" is concluded at the meeting on the 5th inst., the adjourned discussion on Messrs. Scott and Esson's papers will be taken. 8 p.m.

FRIDAY, FEBRUARY 13.

Institution of Civil Engineers (Students' Meeting).—Mr. H. A. Bartlett on "The Construction and Setting-out of Tunnels in the London Clay." 8 p.m.

SATURDAY, FEBRUARY 14.

Junior Institution of Engineers.—Eighteenth Anniversary Dinner, at the Hotel Cecil. The President, Colonel E. Raban, C.B., R.E., in the chair. 7 p.m.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

January 22.—By GRIMLEY & SON (at Birmingham).

Olton, Warwick.—St. Bernard's-rd., Stretton Farm, 22 acres, f., y.r. 50*l.* £3,250

By BAXTER, PAYNE, & LEPPER (At Bromley).

Bromley, Kent.—20 to 26 (even), Newbury-rd., f., w.r. 93*l.*, 12s. 1,005

January 26.—ELLIOTT, SON, & BOYTON.

Cavendish-square.—58, Harley-st., u.t. 9½ yrs., g.r. 40*l.*, y.r. 225*l.* 1,310

By LEOPOLD FARMER & SONS.

Kilburn.—42, Oxford-rd., u.t. 56 yrs., g.r. 11*l.*, y.r. 55*l.* 480

Maida Vale.—248, Portsdown-rd., u.t. 73 yrs., g.r. 10*l.* 10s., e.r. £5*l.* 595

St. John's Wood.—115, Clifton-hill, u.t. 38 yrs., g.r. 15*l.* 4s., y.r. 80*l.* 600

By MAY & PHILPOT.

Streatham.—25, Streatham-hill, u.t. 21½ yrs., g.r. 12*l.*, e.r. 85*l.* 630

By MULLETT, BOOKER, & CO.

Hyde Park.—12, Lancaster-gate, f., p. 4,150

By HOLCOMBE, BETTS, & WEST.

St. John's Wood.—31, Queen's-rd., u.t. 34 yrs., g.r. 12*l.* 10s., y.r. 70*l.* 750

By A. SAVILL & SON.

Homerton.—High-st., The Adam and Eve p.-h, &c., f.g.r. 90*l.*, reversion in 70 yrs. 2,700

Ashenden-rd., f.g.r. 18*l.*, reversion in 78 and 79 yrs. 490

Roding-rd., f.g.r.'s 227*l.* 10s., reversion in 89 yrs. 5,800

Chelmer-rd., f.g.r. 5*l.*, reversion in 79 yrs. 135

Ashenden-rd., f.g.r.'s 57*l.*, reversion in 71, 79, and 82 yrs. 1,495

Durrington-rd., f.g.r.'s 92*l.* 5s. 6d. (increasing to 172*l.* 12s. in 1917), reversion in 71 yrs. 3,220

Durrington-rd., f.g.r. 39*l.*, reversion in 83 and 84 yrs. 1,000

Colne-rd., f.g.r. 27*l.*, reversion in 84 yrs. £95

Marsh Hill, f.g.r.'s 34*l.* 4s. (increasing to 72*l.* in 1917), reversion in 71 yrs. 1,335

Pincey-rd., f.g.r. 8*l.* 11s. (increasing to 18*l.* in 1917), reversion in 71 yrs. 325

Daubeney-rd., f.g.r. 46*l.*, reversion in 80 and 88 yrs. 1,180

January 27.—By ANSCOMBE & RINGLAND.

Regent's Park.—32, Avenue-rd. and 8, Regent's-mews, u.t. 34 yrs., g.r. 20*l.*, p. 2,400

By CRAFTER, HARRIS, & CO.

Croydon.—Handcroft-rd., The Cannon, p.-h., a freehold rental of 21*l.*, reversion in 49½ yrs. ... 710

By NIGHTINGALE, PHILLIPS, & PAGE.

Kilburn.—88, Clarendon-st., u.t. 49 yrs., g.r. 5*l.* 10s., w.r. 62*l.* 8s. 320

11, 13, and 15, Chippenham-gdns., u.t. 62½ yrs., g.r. 15*l.*, w.r. 143*l.* 940

By RUTLEY, SON, & VINE.

Kentish Town.—44, Raglan-st., u.t. 21½ yrs., g.r. 5*l.*, e.r. 32*l.* 205

Paddington.—Fernhead-rd., i.g.r's. 80*l.*, u.t. 60 yrs., g.r. 40*l.* 785

Kentish Town.—Leverton-st., i.g.r's. 21*l.*, u.t. 39 yrs., g.r. 5*l.* 265

By SALTER, REX, & CO.

Kentish Town.—10 and 14, Willes-rd., u.t. 18½ yrs., g.r. 4*l.*, y.r. 87*l.* 690

By E. SIMPSON.

Old Kent-rd.—55, Trafalgar-rd., u.t. 23 yrs., g.r. 5*l.* 5s., y.r. 34*l.* 175

Peckham.—186 and 188, St. George's-rd., u.t. 60 yrs., g.r. 7*l.*, w.r. 57*l.* 4s. 470

Deptford.—62, Rolt-st., u.t. 60½ yrs., g.r. 5*l.*, w.r. 33*l.* 16s. 300

By FREDERICK WARMAN.

Barnsbury.—48, 50, 56, and 58, Westbourne-rd., u.t. 57 yrs., g.r. 30*l.*, e.r. 192*l.* (in one lot) 1,800

Highbury.—27, Highbury-quadrant, u.t. 46½ yrs., g.r. 17*l.* 17s., e.r. 110*l.* 780

Canonbury.—46, Canonbury-pk. north, u.t. 33½ yrs., g.r. 5*l.* 10s., e.r. 52*l.* 410

Crouch End.—296, Park-rd., u.t. 93 yrs., g.r. 8*l.* 8s., e.r. 34*l.* 450

9, Elder-av., u.t. 79 yrs., g.r. 12*l.* 12s., e.r. 65*l.* 660

Horley, Surrey.—Pinkett's Land, Colley Haw, and 12a. or. 24p. f., p. 310

By BRADY & SON (at Manchester).

Ashton-on-Mersey, Cheshire.—Ashford Old Hall Farm, 117 a. 3r. 32p., f., y.r. 317*l.* 3s. 4d. .. 7,700

Homestead, two cottages, and 1a. 1r. 36p., f., w.r. 35*l.* 12s. 850

Grismore Bank Plot, 4a. 3r. 33p., u.t. 994 yrs., g.r. nil 235

January 28.—By JOHN POTT & SONS.

Herne Hill.—15, Dulwich-rd., f., y.r. 45*l.* 760

By DYER, SON, & HILTON.

Lee.—Leyland-rd., &c., i.g.r. 40*l.*, u.t. 61 yrs., g.r. 18*l.* 130

By ELLIS & SON.

City of London.—1, Cross-lane, area 320 ft. f., p. £1,530

Whitechapel-rd.—No. 203 (S), u.t. 250 yrs., g.r. nil., y.r. 80*l.* 1,560

Westbourne Park.—62, Westbourne Park-villas, u.t. 33½ yrs., g.r. 3*l.*, p. 500

By GRAVES & SON.

Westbourne Park.—45, Cornwall-rd., u.t. 57 yrs., g.r. 13*l.*, e.r. 65*l.* 430

Notting Hill.—147 and 149, Ledbury-rd., u.t. 57 yrs., g.r. 20*l.*, e.r. 120*l.* 825

By T. D. PEACEY.

Battersea.—3 and 5, Savona-st., (S), f., w.r. 58*l.* 10s. 500

Poyntz-rd., f.g.r. 4*l.* 3s., reversion in 76 yrs. 100

By R. TIDEY & SON.

Leytonstone.—3, 4, and 5, Chester-ter., (with shop and workshop), u.t. 94½ yrs., g.r. 14*l.*, w.r. 96*l.* 4s. 595

De Beauvoir Town.—34, Southgate-rd., u.t. 69½ yrs., g.r. 11*l.* 10s., e.r. 44*l.* 430

By SWAN WOODCOCK (at Stratford).

Stratford.—6, Water-lane (S), f., y.r. 33*l.* 500

West Ham.—16 and 18, Park-rd., f., w.r. 57*l.* 4s. 700

Leytonstone.—2, Vernon-rd., u.t. 87 yrs., g.r. 5*l.*, e.r. 32*l.* 320

January 29.—By C. RAWLEY CROSS & CO.

Hammersmith.—4, Rylett-cres., f., e.r. 50*l.* 795

Acton.—45, Alfred-rd., u.t. 74 yrs., g.r. 9*l.*, y.r. 40*l.* 485

By DRIVER, JONAS, & CO.

City of London.—Leadenhall-st., f.g.r. 150*l.*, reversion in 42½ yrs. 5,300

By MARLER & CO.

Kensington.—20, 21, 22, and 23, Kensington-pl. u.t. 46½ yrs., g.r. 22*l.*, w.r. 179*l.* 6s. 1,450

1, Merton-rd., u.t. 29 yrs., g.r. £2, p. 400

By NOTT, CARTWRIGHT, & ETCHES.

Balham.—23 and 25, Rossiter-rd., u.t. 74 yrs., g.r. 16*l.*, y.r. 62*l.* 500

By MORETON RICHES.

Wandsworth.—84 and 86, Bramfield-rd., u.t. 86 yrs., g.r. 14*l.*, y.r. 72*l.* 720

Battersea.—1, 9, 11, 15, and 17, Foxmore-st., u.t. 75 yrs., g.r. 30*l.*, y.r. 171*l.* 12s. 1,600

143 and 145, Meyrick-rd. (S.) and 1, Newcomen-rd (S.), u.t. 64½ yrs., g.r. 15*l.*, w.r. 91*l.* 500

By ROBINS, GORE, & MERCER.

Euston-road.—Nos. 292 and 294; also 12, Eden-st. (shops, workshops, &c.), u.t. 23 yrs., g.r. 250*l.*, e.r. 476*l.* 16s. 2,000

By WM. STEVENS.

Putney.—Disraeli-rd., Violet Villa, f., p. 810

Walthamstow.—58, Coppermill-lane, u.t. 80 yrs., g.r. 5*l.* 5s., w.r. 31*l.* 4s. 230

By WESTMORE & YOUNG.

Penge.—9, Avington-av., u.t. 60 yrs., g.r. 8*l.*, e.r. 35*l.* 295

By C. P. WHITELEY.

Dalston.—113 and 117, Culford-rd., u.t. 20½ yrs., g.r. 10*l.*, e.r. 74*l.* 505

By HERRING, SON, & DAW.

Brixton.—29 and 31, Upper Tulse Hill, y.r. 71*l.*; also i.g.r.'s 76*l.* 10s., u.t. 90 yrs., g.r. 60*l.* 1,500

By B. R. BOSTOCK (at Stratford).

Upton Park.—2, 4, and 6, Crescent-rd., f., w.r. 53*l.* 6s. 600

3 and 5, Crescent-rd., f., w.r. 36*l.* 6s. 410

January 30.—By GEO. HEAD & CO.

St. John's Wood.—16, Queen's-ter. (S), u.t. 16 yrs., g.r. 10*l.* 10s., y.r. 65*l.* 335

By ROBERT REID.

Mayfair.—9, Chesterfield-st., u.t. 833 yrs., g.r. 10*l.*, y.r. 375*l.* 8,520

By REYNOLDS & EASON.

Walthamstow.—35 to 43 (odd), Springfield-rd., u.t 89 yrs., g.r. 17*l.* 10s., w.r. 104*l.* 600

2, 4, 6, 8, 12, 14, 16, 18, and 20, Gladstone-rd., u.t. 89 yrs., g.r. 32*l.*, w.r. 189*l.* 16s. 1,030

43 to 57 (odd), Hartington-rd., u.t. 89 yrs., g.r. 28*l.*, w.r. 166*l.* 8s. 900

By E. & S. SMITH.

Camden Town.—96, Arlington-rd., f., w.r. 74*l.* 2s. 840

Holloway.—41, Fortnam-rd., u.t. 55½ yrs., g.r. 6*l.*, e.r. 34*l.* 350

Contractions used in these lists.—F.g.r. for freehold ground-rent; i.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for possession; e.r. for estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. for lane; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; gr. for grove; b.h. for beer-house; p.h. for public-house; o. for offices; s. for shops.

PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£	s.	d.		
Hard Stocks	1	14	0	per 1,000 alongside,	in river.
Rough Stocks and Grizzles.....	1	11	0	,, ,,	,,
Facing Stocks....	2	12	0	,, ,,	,,
Shippers	2	5	0	,, ,,	,,
Flettons	1	7	6	,, at railway	depôt
Red Wire Cuts ..	1	12	0	,, ,,	,,
Best Fareham Red	3	12	0	,, ,,	,,
Best Red Pressed Ruabon Facing	5	0	0	,, ,,	,,
Best Blue Pressed Staffordshire ..	4	5	0	,, ,,	,,
Do. Bullnose	4	11	0	,, ,,	,,

PRICES CURRENT (*Continued*).

BRICKS, &c.

	£	s.	d.			
Best Stourbridge Fire Bricks	4	8	0	per 1,000 at railway depot.		
GLAZED BRICKS.						
Best Whits and Ivory Glazed Stretchers.....	13	0	0	,,	,,	,,
Headers	12	0	0	,,	,,	,,
Quoins, Bullnose, and Flats.....	17	0	0	,,	,,	,,
Double Stretchers	19	0	0	,,	,,	,,
Double Headers..	16	0	0	,,	,,	,,
One Side and two Ends.....	19	0	0	,,	,,	,,
Two Sides and one End	20	0	0	,,	,,	,,
Splays, Chamfered, Squints.....	20	0	0	,,	,,	,,
Best Dipped Salt Glazed Stretchers and Headers	12	0	0	,,	,,	,,
Quoins, Bullnose, and Flats.....	14	0	0	,,	,,	,,
Double Stretchers	15	0	0	,,	,,	,,
Double Headers..	14	0	0	,,	,,	,,
One Side and two Ends.....	15	0	0	,,	,,	,,
Two Sides and one End	15	0	0	,,	,,	,,
Splays Chamfered, Squints.....	14	0	0	,,	,,	,,
Second Quality White and Dipped Salt Glazed	2	0	0	,,		less than best.
Thames and Pit Sand				7	0	per yard, delivered.
Thames Ballast				6	0	,, ,,
Best Portland Cement				30	0	per ton, delivered.
Best Ground Blue Lias Lime..				21	0	,, ,,

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 10s. 6d. per yard, delivered.
Stourbridge Fire-clay in sacks 27s. 6d. per ton at rly. dpt.

STONE.

	s.	d.			
Ancaster in blocks	1	11	per ft. cube, deld. rly. depôt.		
Bath ,, ...	1	7	,,	,,	
Farleigh Down Bath ..	1	8	,,	,,	
Beer in blocks	1	6	,,	,,	
Grinshill ,, ...	1	10	,,	,,	
Brown Portland in blocks	2	2	,,	,,	
Darley Dale in blocks..	2	4	,,	,,	
Red Corsehill ,,	2	5	,,	,,	
Closeburn Red Freestone	2	0	,,	,,	
Red Mansfield ,,	2	4	,,	,,	
YORK STONE—*Robin Hood Quality.*	s.	d.			
Scappled random blocks	2	10	per ft. cube, deld. rly. depôt.		
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2	3	per foot super.	,,	
6 in. Rubbed two sides Ditto, Ditto	2	6	,,	,,	
3 in. Sawn two sides slabs (random sizes)..	0	11½	,,	,,	
2 in. to 2½ in. Sawn one side slabs (random sizes)	0	7½	,,	,,	
2½ in. to 2 in. ditto, ditto	0	6	,,	,,	
BEST HARE. YORK—					
Scappled random blocks	3	0	per ft. cube	,,	
6 in. sawn two sides, landings to sizes (under 40 ft. sup.)	2	8	per ft. super.	,,	
6 in. Rubbed two sides Ditto	—		,,	,,	
3 in. sawn two sides slabs (random sizes)	1	2	,,	,,	
2 in. self-faced random flags.....	0	5	,,	,,	
Hopton Wood (Hard Bed) in blocks	2	3	per ft. cube.		
,, ,, ,, 6 in. sawn both sides landings	2	7	per ft. super. deld. rly. depôt.		
,, ,, ,, 3 in. do.	1	2½	,,	,,	

SLATES.

in.	in.	£	s.	d.		
20	10 best blue Bangor..	13	2	6	per 1000 of 1200 at ry. dep.	
20	12 ,, ,, ,, ..	13	17	6	,,	,,
20	10 best seconds ,,	12	15	0	,,	,,
20	12 ,, ,, ,,	13	10	0	,,	,,
16	8 best ,,	7	0	0	,,	,,
20	10 best blue Portmadoc	12	5	0	,,	,,
16	8 best blue Portmadoc	6	0	0	,,	,,
20	10 best Eureka unfading green....	15	0	0	,,	,,
20	12 ,, ,,	16	10	0	,,	,,
18	10 ,, ,,	11	10	0	,,	,,
16	8 ,, ,,	8	7	6	,,	,,
20	10 permanent green	10	10	0	,,	,,
18	10 ,, ,,	9	0	0	,,	,,
16	8 ,, ,,	6	5	0	,,	,,

TILES.

	s.	d.			
Best plain red roofing tiles..	42	0	per 1,000, at rly. depôt.		
Hip and valley tiles....	3	7	per doz.	,,	,,
Best Broseley tiles	50	0	per 1,000	,,	,,
Do. Ornamental Tiles	52	6	,,	,,	,,
Hip and valley tiles....	4	0	per doz.	,,	,,
Best Ruabon Red, brown or brindled Do. (Edwards)	57	6	per 1,000	,,	,,
Do. ornamental Do.	60	0	,,	,,	,,
Hip tiles	4	0	per doz.	,,	,,
Valley tiles.....	3	0	,,	,,	,,
Best Red or Mottled Staffordshire Do. (Peakes)	51	9	per 1,000	,,	,,
Do. Ornamental Do.	54	6	,,	,,	,,
Hip tiles	4	1	per doz.	,,	,,
Valley tiles.....	3	8	,,	,,	,,
Best "Rosemary" brand plain tiles	48	0	per 1,000	,,	,,
Do. Ornamental Do.	50	0	,,	,,	,,
Hip tiles	4	0	per doz.	,,	,,
Valley tiles	3	8	,,	,,	,,

PRICES CURRENT (*Continued*).

WOOD.

	At per standard. £	s.	d.	£	s.	d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.....	15	10	0	16	10	0
Deals: best 3 by 9.....	14	10	0	15	10	0
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.....	11	10	0	12	10	0
Battens: best 2½ by 6 and 3 by 6 ..	0	10	0	less than 7 in. and 8 in.		
Deals: seconds	1	0	0	less than best		
Battens: seconds	0	10	0	,,	,,	,,
2 in. by 4 in. and 2 in. by 6 in. ..	9	0	0	9	10	0
2 in. by 4½ in. and 2 in. by 5 in. ..	8	10	0	9	10	0
Foreign Sawn Boards— 1 in. and 1¼ in. by 7 in.	0	10	0	more than battens.		
¾ in.	1	0	0	,,		
Fir timber: Best middling Danzig or Memel (average specification	At per load of 50 ft. 4	10	0	5	0	0
Seconds	4	5	0	4	10	0
Small timber (8 in. to 10 in.)	3	12	6	3	15	0
Small timber (6 in. to 8 in.).....	3	0	0	3	10	0
Swedish balks	2	15	0	3	0	0
Pitch-pine timber (30 ft. average)..	3	5	0	3	15	0
JOINERS' WOOD.	At per standard.					
White Sea: First yellow deals, 3 in. by 11 in.....	23	0	0	24	0	0
3 in. by 9 in.	21	0	0	22	10	0
Battens, 2½ in. and 3 in. by 7 in.	17	0	0	18	10	0
Second yellow deals, 3 in. by 11 in.	18	10	0	20	0	0
,, ,, 3 in. by 9 in.	17	10	0	19	0	0
Battens, 2½ in. and 3 in. by 7 in.	13	10	0	14	10	0
Third yellow deals, 3 in. by 11 in. and 9 in.	15	10	0	16	10	0
Battens, 2½ in. and 3 in. by 7 in.	11	10	0	12	10	0
Petersburg: first yellow deals, 3 in. by 11 in.	21	0	0	22	10	0
Do. 3 in. by 9 in.....	18	0	0	19	10	0
Battens.....	13	10	0	15	0	0
Second yellow deals, 3 in. by 11 in.....	16	0	0	17	0	0
Do. 3 in. by 9 in.	14	10	0	16	0	0
Battens.....	11	10	0	12	10	0
Third yellow deals, 3 in. by 11 in.....	13	10	0	14	0	0
Do. 3 in. by 9 in.	13	0	0	14	0	0
Battens	10	0	0	11	0	0
White Sea and Petersburg:—						
First white deals, 3 in. by 11 in.	14	10	0	15	10	0
,, ,, 3 in. by 9 in.	13	10	0	14	10	0
Battens.....	11	0	0	12	0	0
Second white deals 3 in. by 11 in.	13	10	0	14	10	0
,, ,, ,, 3 in. by 9 in.	12	10	0	13	10	0
,, ,, ,, battens.....	9	10	0	10	10	0
Pitch-pine: deals	16	0	0	18	0	0
Under 2 in. thick extra	0	10	0	1	0	0
Yellow Pine—First, regular sizes ..	33	0	0	upwards.		
Oddments	22	0	0	24	0	0
Seconds, regular sizes	24	10	0	26	10	0
Yellow Pine Oddments	20	0	0	22	0	0
Kauri Pine—Planks, per ft. cube..	0	3	6	0	4	6
Danzig and Stettin Oak Logs— Large, per ft. cube	0	2	6	0	3	6
Small ,, ,, ...	0	2	3	0	2	6
Wainscot Oak Logs, per ft. cube ..	0	5	0	0	5	6
Dry Wainscot Oak, per ft. sup. as inch	0	0	7	0	0	8
¾ in. do. do.	0	0	6½	-	-	-
Dry Mahogany— Honduras, Tabasco, per ft. sup. as inch	0	0	9	0	0	11
Selected, Figury, per ft. sup. as inch	0	1	6	0	2	0
Dry Walnut, American, per ft. sup. as inch	0	0	10	0	1	0
Teak, per load	16	10	0	20	0	0
American Whitewood Planks— Per ft. cube	0	4	0	-	-	-
Prepared Flooring—	Per square.					
1 in. by 7 in. yellow, planed and shot.....	0	13	6	0	17	6
1 in. by 7 in. yellow, planed and matched.....	0	14	0	0	18	0
1¼ in. by 7 in. yellow, planed and matched.....	0	16	0	1	1	6
1 in. by 7 in. white, planed and shot.....	0	11	6	0	13	6
1 in. by 7 in. white, planed and matched.....	0	12	0	0	14	0
1¼ in. by 7 in. white, planed and matched.....	0	14	6	0	16	6
¾ in. by 7 inch yellow matched and beaded or V-jointed boards	0	11	0	0	13	6
1 in. by 7 in. do. do. do.	0	14	0	0	18	0
¾ in. by 7 in. white do. do.	0	10	0	0	11	6
1 in. by 7 in. do. do. do.	0	11	6	0	13	6

6-in. at 6d. to 9d. per square less than 7-in.

JOISTS, GIRDERS, &c.

	In London, or delivered. £	s.	d.	Railway Vans, per ton. £	s.	d.
Rolled Steel Joists, ordinary sections	6	5	0	7	5	0
Compound Girders ,, ,,	8	2	6	9	5	0
Angles, Tees and Channels, ordinary sections	7	17	6	8	17	6
Flitch Plates	8	5	0	8	15	0
Cast Iron Columns and Stanchions, including ordinary patterns	7	2	6	8	5	6

METALS.

	Per ton, in London £	s.	d.	£	s.	d
IRON—						
Common Bars.....	7	15	0	8	5	0.
Staffordshire Crown Bars, good merchant quality	8	5	0	8	15	0
Staffordshire "Marked Bars" ..	10	10	0	-	-	-
Mild Steel Bars	9	0	0	9	10	0
Hoop Iron, basis price.....	9	5	0	9	10	0
,, galvanised.....	16	0	0	-	-	-
,, (* And upwards, according to size and gauge.)						
Sheet Iron, Black.—						
Ordinary sizes to 20 g.	10	0	0	-	-	-
,, ,, to 24 g.	11	0	0	-	-	-
,, ,, to 26 g.	12	10	0	-	-	-
Sheet Iron, Galvanised, flat, ordinary quality—						
Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.....	12	15	0	-	-	-
,, ,, 22 g. and 24 g.	13	5	0	-	-	-
,, ,, 26 g.....	14	5	0	-	-	-

PRICES CURRENT (*Continued*).

METALS.

	Per ton, in London. £	s.	d.	£	s.	d.
Sheet Iron, Galvanised, flat, best quality:—						
Ordinary sizes to 20 g.....	16	0	0	-	-	-
,, ,, 22 g. and 24 g.	16	10	0	-	-	-
,, ,, 26 g.....	18	0	0	-	-	-
Galvanised Corrugated Sheets:—						
Ordinary sizes, 6 ft. to 8 ft. 20 g.	12	13	0	-	-	-
,, ,, 22 g. and 24 g.	13	5	0	-	-	-
,, ,, 26 g.....	14	5	0	-	-	-
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. by 20 g. and thicker ..	12	0	0	-	-	-
,, ,, 22 g. and 24 g.	13	0	0	-	-	-
,, ,, 26 g.	14	5	0	-	-	-
Cut nails, 3 in. to 6 in.	9	5	0	9	15	0.
(Under 3 in. usual trade extras.)						

LEAD, &c.

	Per ton, in London. £	s.	d.	£	s.	d.
LEAD—Sheet, English, 3 lbs. & up.	14	5	0	-	-	-
Pipe in coils	14	15	0	-	-	-
Soil pipe	17	5	0	-	-	-
Compo Pipe	17	5	0	-	-	-
ZINC—Sheet—						
Vieille Montagne ..... ton	25	0	0	-	-	-
Silesian	24	15	0	-	-	-
COPPER—						
Strong Sheet ..... per lb.	0	0	10	-	-	-
Thin ..... ,,	0	0	11	-	-	-
Copper nails ..... ,,	0	0	11	-	-	-
BRASS—						
Strong Sheet..... ,,	0	0	9	-	-	-
Thin ,, ... ,,	0	0	10	-	-	-
TIN—English Ingots ..... ,,	0	1	3½	-	-	-
SOLDER—Plumbers' ..... ,,	0	0	6½	-	-	-
Tinmen's ..... ,,	0	0	8½	-	-	-
Blowpipe ..... ,,	0	0	9½	-	-	-

ENGLISH SHEET GLASS IN CRATES.

15 oz. thirds	2½d.	per ft. delivered.
,, fourths.....	1½d.	,, ,,
21 oz. thirds	3½d.	,, ,,
,, fourths.....	2½d.	,, ,,
26 oz. thirds	4d.	,, ,,
,, fourths.....	3½d.	,, ,,
32 oz. thirds	5d.	,, ,,
,, fourths.....	4½d.	,, ,,
Fluted sheet, 15 oz.	3d.	,, ,,
,, 21 oz.	4d.	,, ,,
⅛ Hartley's Rolled Plate	1½d.	,, ,,
⅜ ,, ,, ,, ...	2d.	,, ,,
¾ ,, ,, ,, ...	2½d.	,, ,,

OILS, &c.

		£	s.	d.
Raw Linseed Oil in pipes or barrels..	per gallon	0	2	3
,, ,, ,, in drums.....	,,	0	2	7
Boiled ,, ,, in pipes or barrels..	,,	0	2	5
,, ,, ,, in drums.....	,,	0	2	9
Turpentine, in barrels	,,	0	3	6
,, in drums	,,	0	3	8
Genuine Ground English White Lead	per ton	20	10	0
Red Lead, Dry	,,	20	0	0
Best Linseed Oil Putty.....	per cwt.	0	8	0
Stockholm Tar.....	per barrel	1	12	0

VARNISHES, &c.

	Per gallon £	s.	d.
Fine Pale Oak Varnish	0	8	0
Pale Copal Oak.....	0	10	6
Superfine Pale Elastic Oak	0	12	6
Fine Extra Hard Church Oak	0	10	6
Superfine Hard-drying Oak, for Seats of Churches.....	0	14	0
Fine Elastic Carriage	0	12	6
Superfine Pale Elastic Carriage	0	16	0
Fine Pale Maple	0	16	0
Finest Pale Durable Copal	0	18	0
Extra Pale French Oil	1	1	0
Eggshell Flatting Varnish	0	18	0
White Copal Enamel	1	4	0
Extra Pale Paper	0	12	0
Best Japan Gold Size	0	10	6
Best Black Japan	0	16	0
Oak and Mahogany Stain	0	9	0
Brunswick Black	0	8	6
Berlin Black	0	16	0
Knotting	0	10	0
French and Brush Polish	0	10	0

TO CORRESPONDENTS.

S. S. P.—J. B. (Amounts should have been stated.)

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COMPETITIONS, CONTRACTS AND PUBLIC APPOINTMENTS.

(For some Contracts, &c., still open, but not included in this List, see previous issues.)

COMPETITIONS.

Nature of Work.	By whom Required.	Premiums.	Designs to be delivered
*Town Hall and Municipal Buildings	Chepping Wycombe Corporation	105*l.* and 28*l.* 5*s.*	Mar. 4
*Soldiers' Memorial, Kingston-upon-Hull	Soldiers' Memorial Committee	Not stated	Mar. 15
Free Library	Castleford (Yorks) U.D.C.	15*l.* and 10*l.*	Mar. 31
*Laying out Piece of Land	Yeovil Corporation	21*l.* and 10*l.* 10*s.*	April 10
*Proposed Technical School	Blackpool Corporation	60*l.*, 25*l.*, and 10*l.*	April 14
*Alterations and Additions to Victoria Hall	Sunderland Corporation	100*l.*, 50*l.*, and 25*l.*	April 30
*Designs for Public Offices and Town Hall	Ealing Borough Council	50*l.* each to Selected Competitors	No date.

CONTRACTS.

Nature of Work or Materials.	By whom Advertised.	Forms of Tender, &c., supplied by	Tenders to be delivered
Schoolroom, Pottery-row, Merthyr	Trustees	T. Roderick, Architect, 50. Glebeland-street, Merthyr	Feb. 11
Additions to Stoke School	Coventry School Board	J. & T. Steane, Architect, 22, Little Park-street, Coventry	do.
Road Metal, &c.	Smallburgh (Norfolk) R.D.C.	W. L. Lewis, District Surveyor, Stalham	do.
Street Works, St. Mary's-road, Bamber Bridge	Walton-le-Dale U.D.C.	F. R. Dixon, Civil Engineer, 49, Lune-street, Preston, Lancs.	do.
Works at Kingston, Hopwood-lane, Halifax	Messrs. J. Whittaker & Sons	G. Buckley & Son, Architects, Tower Chambers, Halifax	do.
Setts, Kerbs, &c.	Stockport Corporation	J. Atkinson, Civil Engineer, Town Hall, Stockport	do.
Making-up Millais-road, Bush Hill Park	Enfield U.D.C.	R. Collins, Surveyor, Court House, Enfield	do.
Surveyor's Materials	Forfarshire County Council	D. Ross, Surveyor, Kirriemuir, N.B.	do.
Twenty-eight Houses, Aberdare	Ynyslwyd Building Club	W. F. Thomas, Architect, Aberdare	do.
*Making-up, &c., Warwick Cottages, and Montpelier-row	Hammersmith Borough Council	Borough Surveyor, Town Hall, Broadway, Hammersmith, W.	do.
Bridge, North-lane, York	North-Eastern Railway Co.	W. J. Cudworth, Engineer, York	Feb. 12
Sewers, Bramley	Rotherham R.D.C.	B. Hey, Surveyor, 29, High-street, Rotherham	do.
Sewers, &c., Hoyland, near Barnsley	Hoyland Nether U.D.C.	W. P. Young, Surveyor, Town Hall, Hoyland	do.
Pumping Station	Portsmouth Corporation	A. Hellard, Town Hall, Portsmouth	do.
Chimney Stack, &c.	Stoke-upon-Trent Corporation	A. Burton, Civil Engineer, Town Hall, Stoke-on-Trent	do.
Cottage, Victoria-road, Warminster	Mr. J. Curtis	A. F. Long, Architect, 53, Market-place, Warminster	do.
Schools, High-street	Barry School Board	G. Thomas, Architect, Queen's Chambers, Cardiff	do.
Road Materials	Basford (Notts) R.D.C.	J. W. Hawley, Surveyor, King-street, Nottingham	do.
Stone, Granite, &c. (7,500 tons)	Brixworth R.D.C.	W. C. Woodford, 16, Market-place, Northampton	do.
Approach Works, Cromar Estate, Aberdeen	.....	Walker & Duncan, Civil Engineers, 3, Golden-square, Aberdeen	do.
*Public Underground Convenience, Kingsland High-st.	Hackney Borough Council	Borough Engineer, Town Hall, Hackney, N.E.	do.
Seven Houses, Cottingley, Yorks.	Messrs. Dibb	W. R. Nunns, Architect, Market-street, Bingley	Feb. 13
Road Materials	East Retford R.D.C.	District Surveyor, Market-square, Retford	do.
Hospital, Carrhouse-lane	Mottram-in-Longdendale R.D.C.	J. Lindley, Architect, Town Hall Buildings, Hyde	do.
Wall, &c., Dolycoed-terrace, Tylorstown	Pentre Rhondda U.D.C.	W. J. Jones, Surveyor, Council Offices, Pentre	do.
Sewers, near Ynyhir	do.	do.	do.
Storage Reservoir, Menston, Yorks.	Wharfedale R.D.C.	R. J. Silcock, Civil Engineer, 10, Park-row, Leeds	do.
Two Cottages, Celbridge, Ireland	Guardians	F. Shortt, Boardroom, Workhouse, Celbridge	do.
Conveniences at Recreation Ground, Harehills	Leeds Corporation	City Engineer, Town Hall, Leeds	do.
Generating Station, Offices, &c., at Tram Offices	do.	E. J. Mawbey, Civil Engineer, Town Hall, Leeds	do.
Sewers, &c., Swepstone-road, Measham	Ashby-de-la-Zouche R.D.C.	S. Turner, Surveyor, Measham	do.
Electrical Plant	Darlington Corporation	Kennedy & Jenkin, Civil Engineers, 17, Victoria-street, S.W.	do.
Surveyor's Materials	Colne (Lancs.) Corporation	T. H. Hartley, Borough Surveyor, Town Hall, Colne	Feb. 14
Sewage Farm Extensions	do.	do.	do.
Stone and Broken Granite Road Metal	Ebbw Vale (Mon. U.D.C.	T. Hughes, Council Offices, Ebbw Vale	do.
Laundry Buildings, Raby Castle, Bishop Auckland	Right Hon. Lord Barnard	F. H. Livesay, Architect, 107, Newgate-street, Bishop Auckland	do.
Two 4-lift Gasholders, Foleshill	Coventry Corporation	F. W. Stevenson, Engineer, Gasworks, Coventry	do.
Excavating, Concreting, &c., for Gasholder Tank	Hinckley U.D.C.	F. Lee, Engineer, Council Offices, Hinckley	do.
Road Works, &c. (Contracts 23 to 36)	Devonport Corporation	J. F. Burns, Borough Surveyor, 29, Ker-street, Devonport	do.
Making-up Cudworth-road, Willesborough	East Ashford R.D.C.	T. H. Wilde, Surveyor, Albemarle-road, Willesborough	Feb. 16
Cast Iron Pipes	Edinburgh District Lunacy Board	Leslie & Reid, Civil Engineers, 72A, George-street, Edinburgh	do.
Cattle Market Works	Morpeth Town Council	Borough Surveyor, Bridge-street, Morpeth	do.
Road Works, Oldgate-street	do.	do.	do.
Electric Lighting Works at Hospital, Colinton Mains	Edinburgh Town Council	T. Hunter, City Chambers, Edinburgh	do.
Private Street Works	York Corporation	City Engineer, Guildhall, York	do.
Sewer, Ham-street	East Ashford R.D.C.	F. H. Wilde, Surveyor, Albemarle-road, Willesborough	do.
Reservoir, Brox Burn	Edingburgh District Lunacy Board	Leslie & Reid, Civil Engineers, 72A, George-street, Edinburgh	do.
Circular Chimney at Refuse Destructor Depot	Chorley (Lancs) Corporation	Borough Surveyor, Town Hall, Chorley	do.
*Supply of Materials, &c., for one year	Hendon U.D.C.	Council's Surveyor, Public Offices, Hendon, N.W.	do.
*Supply of Timber and Builders' Materials	Metropolitan Asylums Board	Office of Board, Embankment, E.C.	do.
*Additions to Offices at Electricity Works	County Borough Croydon	Borough Engineer's Office, Town Hall, Croydon	do.
*Boundary Wall, Fencing, Lodge, Conservatory, &c.	Tottenham U.D.C.	Council's Engineer, 712, High-road, Tottenham	Feb. 17
*Pipe Sewer, South-place-mews	Corporation of London	Engineer to the Corporation, Guildhall, E.C.	do.
Sewerage Works, White Abbey	Belfast R.D.C.	Young & Mackenzie, Civil Engineers, Belfast	do.
Police Station and Houses, Trafford Park, Manchester	Lancashire County Council	H. Littler, Architect, County Office, Preston	do.
Road Metal	Middlesbrough R.D.C.	W. H. Dixon, Surveyor, Kirby-in-Cleveland	do.
Road Metal	Stokesley R.D.C.	do.	do.
Road Materials	Salisbury R.D.C.	F. Hodding, Market House Chambers, Salisbury	do.
*Erection of Dormitories, &c. at Workhouse	Bethnal Green Guardians	W. A. Finch, 76, Finsbury-pavement, E.C.	do.
Underground Conveniences near Esplanade	Littlehampton U.D.C.	H. Howard, Town Surveyor, Littlehampton	Feb. 18
*Works and Materials	Borough of Hampstead	Borough Engineer, Town Hall, Hampstead, N.W.	do.
Sewers, &c.	Clacton-on-Sea U.D.C.	A. R. Robinson, Surveyor, Town Hall, Clacton	do
House, Workshops, &c. Sackville-road	Hove (Sussex) Corporation	H. H. Scott, Borough Surveyor, Town Hall, Hove	do.
*Erection of Police Station, Swanley	Kent County Council	County Surveyor, 86, Week-street, Maidstone	do.
*Five Water Vans and Carts	Woolwich Borough Council	Borough Engineer, Maxey-road, Plumstead	Feb. 19
Wharf, Cattewater Harbour	Plymouth Town Council	J. H. Ellis, Town Hall, Plymouth	do.
*Making-up of Roads	Ealing Town Council	Borough Engineer, Town Hall, Ealing, W.	do.
Sewers, Torkington-road, Hazel Grove, near Stockport	Bramhall U.D.C.	Sykes & Brady, Civil Engineers, 13, Warren-street, Stockport	do.
*New Post Office, Burton-on-Trent	Commissioners of H.M. Works	H.M. Office of Works, Storey's Gate, S.W.	do.
Surveyor's Materials	East Sussex County Council	F. J. Wood, Civil Engineer, County Hall, Lewes	Feb. 21
*Sewerage Works, Grantchester	Chesterton R.D.C.	Waters & Worrall, 2, Sidney-street, Cambridge	Feb. 25
*Erection of Cottages, Leavesden Asylum	Metropolitan Asylums Board	Office of Board, Embankment, E.C.	do.
*Supply of Materials and Execution of Works	Islington Borough Council	Town Hall, Upper-street, N.	Feb. 26
*Alterations and Additions, Stowmarket Workhouse	Stow Union	J. S. Corder, Architect, Ipswich	Feb. 28
*Erection of Electric Power Station, Southwick	Brighton Corporation	Town Clerk, Town Hall, Brighton	Mar. 2
*Erection of School	Crayford School Board	C. L. Morgan, Architect, 43, Cannon-street, E.C.	do.
*Supply of Road Materials	Middlesex County Council	County Engineer, Middlesex Guildhall, Westminster	Mar. 3
*Cartage of Road Materials	do.	do.	do.
*Erection of a Central Fire Brigade Station	Wimbledon R.D.C.	Council's Engineer, The Broadway, Wimbledon	do.
*Underground Convenience, Blomfield-street	Corporation of London	The Engineer, Guildhall	do.
*Additional Blocks for 300 Patients	Catford Asylum	G. T. Hine & Co., Architects, 35, Parliament-street, S.W.	Mar. 15
*Supply of Furniture and Fittings	Leeds Institute of Science, &c.	Bedford & Kitson, Greek-street Chambers, Leeds	No date
Stone (1,500 tons), Abingdon	Culham R.D.C.	B. Chancellor, 59, Fiert-street, Abingdon	do.
Macadam, Flints, &c.	Staines R.D.C.	G. W. Manning, Surveyor, London-road, Ashford, Staines	do.
Hotel, Blaenavon, near Neath	.....	James & Upham, Architects, 48, Quay-street, Cardiff	do.
Rebuilding the Railway Inn, Ton Mawr, near Neath	.....	do.	do.
Sixty Houses, Nantyffyllon Estate, near Maesteg	Builder's Society	W. W. Paddison, Architect, Llynol Offices, Maesteg	do.
Sewers, Harmondsworth	Staines R.D.C.	G. W. Manning, Surveyor, London-road, Ashford, Staines	do.
Reconstruction, Baptist Church, Abingdon-st., Blackpool	.....	Oldrieve & Hindle, Architects, 11, Bridge-street, Manchester	do.
Reconstruction of Ward at Blackburn Infirmary	.....	Simpson & Duckworth, Architects, Richmond Chambers, Blackburn	do.
Additions to Bakery, Mitchell-street, Morley, Yorks	Industrial Co-operative Soc., Ltd.	R. Castle & Son, Architects, Cleckheaton	do.
House, Manor Park Estate, Hampton, Middlesex	Land and Building Co., Ltd.	F. J. Hughes, Architects, Estate Office, Hampton	do.
Two Houses, Hampton, Middlesex	do.	do.	do.
Two Villas, Beverley-road, Hull	.....	Freeman & Co., Architects, 11, Carr-lane, Hull	do.

[See also next page.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in
*Borough Engineer	Stamford U.D.C.	200l. &c.	Feb. 16

Those marked with an asterisk (*) are advertised in this Number. *Competitions*, iv. *Contracts*, iv. vi. viii. x. & xxi. *Public Appointments*, xviii.

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than 10 a.m. on Thursdays.* N.B.—We cannot publish Tenders unless authenticated either by the architect or the building-owner]; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under 100l., unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

BOURNEMOUTH.—For building new club room and making certain alterations and additions to the Brunswick Hotel, Bournemouth, for the Directors of Marston's Brewery Co., Ltd., Poole. Mr. Walter Andrew, architect and surveyor, Parkstone and Poole. Quantities by architect:—

Williams & Son	£1,486	A. & F. Wilson	£1,338
Jones & Son	1,423	Jenkins & Son	1 335
Maddeford & Co.	1,352	Miller & Sons, Bournemouth*	1,300
Baker & Pearcy	1,350		

BROMLEY.—For two houses, Sundridge Park. Mr. W. James Pamphilon, architect:—

Perry Bros.	£4,397	Duthoit	£3 815
Payne	3,896	Lowe	3,785
Arnaud & Son	3,896	Crossley & Son	3,680
Gray	3,873		

CAMBORNE (Cornwall).—For the erection of Council offices, fire station, &c., for the Urban District Council. Mr. Sampson Hill, architect, Redruth:—

Hodge & Mitchell, Redruth and Camborne* £1,637

CROMER.—For the erection of an electric light station, for the Urban District Council. Messrs. O'Gorman & Hardy, engineers, 82, Victoria-street, Westminster:—

F. Minter	£3,590 0 0	H. Bullen	£3,147 0 0
R. Chapman	3,410 0 0	S. & F. Smith	3,066 0 0
T. Blyth	3,350 0 0	Barnes & Co.	2,903 0 0
W. Porter	3,329 7 0	A. Lines	2,900 0 0
J. W. Neale	3,245 15 6	Girling & Smith, Cromer*	2,885 0 0
Youngs & Son	3,239 8 5		
Geo. Elsey	3,200 0 0		

CROYDON.—Four houses, Eden-road, Park-lane. Mr. A. Broad, architect, 22, George-street, Croydon. Quantities by the architect:—

W. Potter	£3,173	Smith & Sons, Ltd.	£2,902
Dawson & Son	3,150	Hanscomb & Smith	2,984
Worsfold & Sons	3,079	D. W. Barker	2,980
E. J. Saunders	3,050	Akers & Co.	2,939
E. J. Burnand	3,029	Smith & Sons*	2,773

CROYDON.—For the erection of thirty-two cottages, Beulah-grove, Croydon, for Mr. G. C. Parsons, in accordance with plans and specifications prepared by Mr. Arthur L. Dartnell, architect and surveyor, 62, High-street, Croydon:—

G. Brayne	£7,904 0	W. Roberts	£6,683 0
Smart & Son	7,345 0	Cronk & Richardson*	6,067 4
W. Gowman	7,339 0		
W. Martin	7,196 10		

DUNMOW.—For the erection of six cottages:—

W. Hart Gregson (Plan B)	£1,255 0
D. Harwood	1,200 0
W. Hart Gregson (Plan A)	1,090 0
T. A. Goodey	1,060 0
S. Wiles & Son	1,050 0
F. F. Leach	1,020 0
Bush & Co.	990 0
Letch & Bowtell (Plan B)	914 0
Richardson & Co.	900 0
Letch & Bowtell (Plan A)	890 0
W. Hart Gregson (Plan C)	831 0
C. E. Hope	780 0
W. Lloyd	724 4

LONDON.—For the erection of a temporary car-shed at the Rye-lane tramways depot, required in connexion with the electrical working of the New Cross and Greenwich section of the London County Council's tramways:—

Walker Brothers, Ltd.	£2,190 0 0
Westwood & Co., Ltd.	1,707 4 3
J. McManus	1,663 4 2
Lightfoot & Ireland	1,642 13 1
Braby & Co., Ltd.	1,580 18 4
E. C. & J. Keay, Ltd.	1,543 0 0
Westwood & Wright	1,494 18 0
Handyside & Co., Ltd.	1,477 4 5
Jukes, Coulson, Stokes, & Co.	1,476 0 0
Cross & Cross	1,399 0 0
Dorman, Long, & Co.	1,376 5 8
Fulham Steel Works Co., Ltd.	1,361 10 2
Jones & Sons, Ltd.	1,351 8 11
Bryden & Middleton	1,299 16 0
John Mundy	1,288 10 11
Baker & Co., Ltd.	1,263 13 4
A. J. Ellis	1,254 10 8
The Clyde Structural Iron Co., Ltd.*	1,288 17 0

LONDON.—For the reconstruction of Bow Bridge, for the London County Council:—

J. A. Ewart	£30,811 4 6
Somervail & Co.	23,877 15 6
Pethick Brothers	19,672 12 0
Mowlem & Co.	19,325 0 0
Fasey & Son	18,947 15 5
Carter Brothers	17,951 6 6
Cochrane & Sons*	17,922 0 0
M. Dinnie	16,367 3 2

LONDON.—For new filth screens, hydraulic engines, and gear required at the Crossness outfall in connexion with the enlargement of the main drainage system on the south side of the Thames, for the London County Council:—

Fullerton, Hodgart, & Barclay, Ltd.	£7,900
Watt & Co.	7,000
J. Cochrane	6,118
Glenfield & Kennedy, Ltd.	5,700
Stewart & Co. (1902), Ltd.	4,430

LONDON.—For alterations to business premises, City-road, for Messrs. Betts & Co., Ltd. Mr. H. Phelps Drew, architect, 33, King-street, Covent Garden, W.C. Quantities by the architect:—

Edwards & Medway	£835	F. G. Minter	£798
Richards & Co.	820	W. Norton, Chelsea*	787
Wilkinson Bros.	817		

LONDON.—For the erection of the first portion of St. James's Church, West Ealing, W. Mr. William Pywell, architect, Cumberland House, Hanwell, W.:—

S. F. Halliday	£6,812	J. Bentley	£6,590
Kingerlee & Sons	6,767	Goddard & Sons	6,435
Dorey & Co.	6,620		

LONDON.—For the erection of chimney-shaft and making alterations and additions to Nos. 50b and 50d, Peckham-rye, S.E., for the Quantock Sanitary Laundry Co. Mr. Arthur Garnar, architect and surveyor, 66, Oakhurst-grove, East Dulwich, S.E.:—

Balaam Bros.	£970	A. P. Maeers	£895
King & Son	930	W. T. Champion*	846
G. Parker	897		

SANDBACH.—For additions to school and almshouse, Globe Pottery, Cobridge, for the Governors. Mr. Alfred Price, architect, Sandbach, Staffs. Quantities by the architect:—

Birchall Bros.	£1,645	Bennett Bros.	£1,392
J. J. Longden	1,524	C. & J. Grant	1,369
G. A. Foster	1,459	T. Godwin, Hanley*	1,360
H. Howlett	1,398		

[The allowance for old material is deducted in each case.]

SCARBOROUGH.—For the execution of sewerage works, Scalby-road, for the Town Council. Mr. H. W. Smith, C.E., Town Hall, Scarborough:—

Cooke & Co.	£781 0 0	Bastiman & Sons, Victoria-road, Scarborough*	£624 16 6
A. Coultas	740 0 0		
W. T. Petch	698 0 0		

SUNDERLAND.—For the erection of a church and schools, Monkwearmouth. Messrs. Potts & Son, architects, 57, John-street, Sunderland:—

Tiffin	£7,574 0 0	W. B. Cooper	£5,469 0 0
S. Ranken	6,998 0 0	J. B. Stott, Monkwearmouth, Sunderland†	5,449 19 4
J. Armitage	6,428 0 0		
J. W. White	6,325 0 0		
Shaftoe	5,959 0 0		
Robertson & Sons	5,774 18 0	Taylor & Welford	5,446 0 0

TADWORTH (near Epsom).—For stabling, &c., at Tattenham Park Hotel, for Messrs. Page & Overton, Ltd. Mr. A. Broad, architect, 22, George-street, Croydon. Quantities by the architect:—

W. Potter	£485	Pearson & Co.	£430
E. J. Burnand	456	Smith & Sons	390
D. W. Barker	455	A. Kinge*	358
Dawson & Son	433		

TYLORSTOWN (Wales).—For additions to schools, for the Ystradyfodwg School Board. Mr. Jacob Rees, architect, Hillside Cottage, Pentre, Glam.:—

M. Morris, Ferndale £2,173

YORK.—For additions and works at Municipal Offices, for the Corporation. Mr. A. Creer, City Engineer, Guildhall, York:—

F. Shepherd, Lead Mill-lane, York* £275

LONDON SCHOOL BOARD.—Repairs to GAS METERS, on a running Contract.

A.—To give the necessary notice to the Gas Company, take down meter and cart it from school to testing office and to works, repaint, return and refix it; and provide and fix temporary meter during the interval, as necessary, and pay stamping fees.

B.—If the meter be found incorrect in registration, to carry out the following additional work, subject to an order from the Board:—To take to pieces, thoroughly cleanse, regrind bearings and valves, oil diaphragms, re-adjust and execute all minor repairs.

C.—If necessary, and where the Board order new cases or diaphragms to be provided, the charges to be as follow, in addition to A and B.

Size of Meters.	A		B		C			
					New Cases.		New Diaphragms.	
	D. Hulett & Co., Ltd.	T. Glover & Co., Ltd., and Parkinson and W. & B. Cowan, Ltd.	D. Hulett & Co., Ltd.	T. Glover & Co., Ltd., and Parkinson and W. & B. Cowan, Ltd.	D. Hulett & Co., Ltd.	T. Glover & Co., Ltd., and Parkinson and W. & B. Cowan, Ltd.	D. Hulett & Co., Ltd.	T. Glover & Co., Ltd., and Parkinson and W. & B. Cowan, Ltd.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
3 light, per meter	0 8 6	0 4 6	0 8 9	0 8 0	0 6 0	0 6 0	0 6 3	0 5 0
5 " "	0 8 6	0 5 0	0 9 6	0 9 0	0 6 6	0 6 6	0 6 6	0 5 6
10 " "	0 9 1	0 6 6	0 11 3	0 12 0	0 8 6	0 8 6	0 8 6	0 6 6
20 " "	0 9 10	0 7 6	0 16 3	0 15 6	0 11 0	0 11 0	0 13 6	0 9 9
30 " "	0 11 11	0 10 0	1 0 0	0 18 0	0 15 0	0 15 0	0 17 9	0 12 0
50 " "	0 14 0	0 12 0	1 5 6	1 4 0	1 1 6	1 1 6	1 2 6	0 16 0
60 " "	0 17 6	0 14 6	1 10 0	1 10 0	1 10 0	1 10 0	1 5 0	1 2 0
80 " "	1 1 0	0 16 0	1 16 3	1 15 0	1 18 0	1 18 0	1 10 0	1 6 0
100 " "	1 5 0	0 18 0	2 2 6	2 1 0	2 5 0	2 5 0	1 15 0	1 14 0
150 " "	1 13 6	1 1 0	3 10 0	2 16 0	4 0 0	4 0 0	2 11 3	2 10 0
200 " "	2 10 6	1 10 0	4 13 9	3 15 0	5 0 0	5 0 0	3 1 3	2 18 0

Note—Parkinson & W. & B. Cowan's prices are subject to a discount of 2½ per cent. cash monthly.

Accept tender of Parkinson and W. & B. Cowan, Limited.

LONDON SCHOOL BOARD TENDERS.

AT the last meeting of the London School Board the Works Committee submitted the following lists of tenders. Mr. T. J. Bailey is the Board's architect :—

* *Recommended for acceptance.*

ANCONA-ROAD.—Special school (mentally defective). 4 classrooms of 50 each, and enclosing, draining, and tar-paving the additional land :—

Garrett & Son	£4,451	Rice & Son	£4,199
F. & H. F. Higgs	4,416	Thomas & Edge	4,197
Holliday & Greenwood, Ltd.	4,318	T. D. Leng	4,174
Johnson & Co., Ltd.	4,296	Smith & Sons, Ltd.	4,061
Lawrance & Sons	4,296	J. & C. Bowyer	4,055
Treasure & Son	4,242	J. & M. Patrick	4,049
Bulled & Co.	4,207	Marsland & Sons	3,966
Stimpson & Co.	4,200	Appleby & Sons*	3,869

BERGER-ROAD.—Manual training centre for forty children, with water-closets and urinal :—

Grover & Son	£1,454	Patman & Fotheringham, Ltd	£1,290
Allen & Sons, Ltd.	1,439	Treasure & Son	1,246
Marchant & Hirst	1,407	W. M. Dabbs	1,221
Gregar & Son	1,391	Outhwaite & Son	1,205
Shurmur & Sons, Ltd.	1,386	C. Cox	1,168
Clarke & Bracey	1,340	Willmott & Sons	1,168
Lawrence & Sons	1,335	Lathey Bros.*	1,153
F. Bull	1,308		

COBOURG-ROAD.—Providing inside water-closets for staff of girls' and infants' departments, and channels under boys' and girls' lavatory ranges; altering weir of latrines of boys', girls', and infants' offices; providing additional asphalte dado and sparge pipes to urinals and access to rain-water pipes, and trapping sink to school-keeper's house, &c. :—

H. Line + 10 per cent. on schedule prices.		W. Downs	£270
Unsigned	£497	W. V. Goad	258
Falkner & Sons	437	Maxwell Bros., Ltd.	250
Johnson & Co.	319	E. Proctor	240
		Rice & Son*	239

ESSEX-STREET. — Refitting boys' and infants' offices; providing sparge pipes and automatic tanks to urinals; rebuilding girls' offices further away from school buildings and refitting girls' p.t. offices on roof; refitting existing lavatories where at present provided with tip-up basins, and substituting glazed open channels for the present horizontal wastes; providing teachers' lavatories; office and urinal accommodation for the male pupil teachers, and part new drainage scheme :—

G. Parker	£3,600	Lawrance & Sons	£3,152
J. T. Robey	3,315	Durbin & Katesmark	3,053
Merchant & Hirst	3,245	Williams & Son	3,035
R. P. Beattie	3,180	Falkner & Sons	3,015
Willmott & Sons	3,166	Johnson & Co.*	2,931

LUCAS-STREET (Improvements). — Providing and fixing complete low-pressure hot-water apparatus to three halls, eighteen classrooms, cloakrooms, corridors, and lavatories (B G & I) :—

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